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ABSTRACT

This document contains 28 papers: "Technical and Vocational Education in Asia and the Pacific: Regional Overview and Recent Innovations" (Muhammad Ashraf Qureshi); "Secondary Education in Austria" (Helmut Aigner); "The Development of Technical Curricula in Austria" (Helmut Aigner); "Technical and Vocational Education in Australia. Australian Country Paper"; "Achieving Industrial Relevance in Technical and Vocational Education: The Australian Approach" (Norman W. F. Fisher); "Technical Training in Brazil and Prospects for Modernization of the Country" (Iunci Picerni Bavaresco); "Vocational and Technical Education in Canada--Current Trends and Issues" (William L. Day); "The Present Situation and the Future Prospects of China's Vocational and Technical Education" (Liu Laiquan); "Technical Education and Vocational Training in Egypt" (Mohamed Ahmed El Haridy); "Technical and Vocational Education and Modernization in Germany" (Gisela Dybowski); "Technical and Vocational Education and Modernization" (Ramesh P. Gangurde); "The School Education through Technological Literacy for Pre-Vocational Education in Japan" (Tasaku Okuya); "Technical and Vocational Education in Malaysia" (Abdul Shukor Abdulllah); "Technical and Vocational Education and Modernization in Nigeria" (Musa D. Abdullahi); "Technical and Vocational Education and Modernization" (Mohammad Ilyas); "People Empowerment" (Alcestis M. Guiang); "Summary of IIRR's [International Institute of Rural Reconstruction] China Program" (Julian Gonsalves); "Technical and Vocational Education in the Republic of Korea" (Mu Keun Lee); "Some Aspects of Vocational and Technical Education in Switzerland" (Dris Morf); "Technical and Vocational Education in Romania: Present and Perspective" (Madlem Serban); "Technical and Vocational Education in Thailand" (Charoon Shoolap); "The National Vocational Qualifications Scheme in the U.K." (John Wallis); "An Overview of Vocational Technical Education in the United States" (Ray D. Ryan, Morgan V. Lewis); "Technical Education and Industrial Training in Hong Kong" (Kam-fong Leung); "The Responsibilities of Enterprises in Technical and Vocational Education and Training under the Conditions of Market Economy" (Li Hengye); "The Development of Vocational Education for Women in China" (Li Yuhong); "Gear Our Education to the Communal Development Adapt to their Needs and Offer Our Service" (Niu Tongping); and "Three Problems Faced by China's Technical and Vocational Education En Route to Market Economy" (Meng

Guangping). Six appendixes contain the agenda for the symposium, three speeches at the opening ceremony, a final report, and a list of participants. (KC)

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ED 412 367

PROCEEDINGS OF THE INTERNATIONAL SYMPOSIUM ON TECHNICAL AND VOCATIONAL EDUCATION

Beijing, 13-18 September 1993

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PROCEEDINGS

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III. Speech at the Opening Ceremony of the International Symposium on Technical and Vocational Education by Mr. Wang Mingda, Vice Chairman, State Education Commission, P.R. CHINA

IV. Speech at the Opening Ceremony of the International Symposium on Technical and Vocational Education by Mr. Hedayat Ahmed, Director, UNESCO PROAP

V. Final Report

VI. List of Participant

TECHNICAL AND VOCATIONAL EDUCATION IN ASIA AND THE PACIFIC: REGIONAL OVERVIEW AND RECENT INNOVATIONS

by
Mr. Muhammad Ashraf Qureshi
Programme Specialist in Technical and Vocational Education
ACEID, UNESCO, PROAP

I consider it an honour and a privilege to have been invited by the Chinese National Commission for UNESCO to share some thoughts with you on a Regional Overview and Recent Innovations in Technical and Vocational Education in Asia and the Pacific. First of all kindly allow me, Mr. Chairman, to convey to you and all the fellow delegates the greetings and best wishes of the "Director-General of UNESCO on the occasion of the opening of this International Symposium on Technical and Vocational Education. The convening of this symposium at this time augurs well as a follow-up to the last Ministerial Conference (MINEDAP VI) held in June 1993 which recognized technical and vocational education as one of the immediate priority concerns of the entire region of Asia and the Pacific. In our opinion, China has really taken the message and the recommendations of the Regional Ministerial Conference are fully compatible with the high priority. The development of technical and vocational education deserves to be accorded in view of its prime role in improving and accelerating the productivities of nations of the region.

At the threshold of the twenty-first century there are unprecedented political, economic and technological upheavals. There is also an ever increasing interdependence in all areas of human endeavour including the development and advancement of technology. However, the basic quality of human life in many societies still needs improvement in accordance with advancements in other walks of life. There is no doubt at all that there has been much economic activity and real economic growth but, again, only in a few societies. This is particularly true of our region which continues to display great diversity in terms of the socio-economic status, cultural heritage and ethnic and racial characteristics of populations.

The biggest asset of our region is its large potential of human resources in terms of size and diversity. Unfortunately, this is also the biggest liability at the moment in many of the countries because of the non or gross under-utilization of these resources in terms of productive pursuits. The literacy level in many countries is abysmally low and the region as a whole accounts for about three quarters of the total number of illiterates in the world. The Minister's Conference, while reviewing educational developments in the region, came to the conclusion that despite significant progress made to date towards achieving education for all much still remains to be done by all the countries to renew their commitment to meeting the World Conference on Education for All targets as they approach the year 2000.

The absolute priority of the region in education, therefore, continues to be "basic education for all' including literacy for all people, especially girls and women. Universalization of primary education still needs substantial additional efforts in rationalizing the school networks and increasing at least 100 million more primary school places before the year 2000. In addition, the region as a whole has the challenging task of making a staggering number of about 700 million literate.

While "basic education for all" remains a high priority, many countries in the region firmly believe that it is now time to look beyond basic education, particularly towards technological literacy and improved vocational education and training, in view of the global ever increasing dependence on technology in all walks of life. It is heartening to note that a good number of countries in the region have attained rates of transition from primary to secondary education of about 75% and above. However, the general rate of growth of secondary intake capacity has not been able to match the rate of output from primary education. The relative share of the technical and vocational stream, within the total enrollment in secondary education has been low except in 11 countries of the region with an enrollment of 10 per cent or more in this stream.

The Minister's Conference recognized technical and vocational education as one of the immediate priority concerns for the entire region. Articulation between education and the world of work clearly came out as a key determinant of the high economic growth rates enjoyed by some countries of the region. To sustain this growth rate a highly literate and capable work force is necessary. The further development and improvement of technical and vocational education including the vocationalization of both primary and secondary education was accordingly seen as an urgent priority along with a greater concentration on skills building for rural occupation. With the growing influence of technology on society and a rapidly changing labour force, the Minister's Conference also emphasized life-long learning as a way of coping with change and as a means of ensuring evolving labour force requirement.

UNESCO has been urging policy makers, and especially those responsible for economic planning, to pay adequate attention to these vitally important matters and to provide and allocate resources to education which enables to continue to provide the human resources needed for national economic development. UNESCO has also been advocating a greater emphasis on human development and a serious rethinking of development as economic models and concepts of development have not always provided the much needed solutions. It is for this reason that cooperation among nations specially regional cooperation assumes special importance, in this part of the world, for the development and upgrading of human resources through relevant education and training, in general, and technical and vocational education, in particular.

Enhancement of national capacities to promote the development of human resources with a capability to adjust to rapid changes in economies and in labour demands, has always been a priority of UNESCO's various regional, sub-regional and national activities, particularly in the field of technical and vocational education in view of its crucial role in increasing productivity. UNESCO has also been emphasizing the continual retraining of personnel, particularly technical manpower, for changing job profiles which demand new types of skills and proficiencies. UNESCO's regional programmes in education for all, higher education, educational planning and management, improvement of education through experimental research and educational innovation for development, and science and technology education underscore this approach.

Ladies and Gentlemen,

Technical and vocational education has a crucial role and responsibility in aligning education with the world of work. The biggest challenge facing vocational education today is to ensure that, in terms of curriculum content, it is responsive to the rapidly changing needs of the work place. This requires the promotion and development of technical and vocational education both as a component of general education and as a preparation for the world of work through new articulations and networking mechanisms for an effective interface with industry, agriculture, business and commerce.

It is reassuring to note that there is a growing realization in countries of the Asia-Pacific region to the importance of meeting the human resource development demands of the constantly changing technology of the modern sector. Accordingly, countries are adapting and readjusting technical education programmes to suit the changing requirements of the work place. Countries regard technical and vocational education as a critical component of economic development, and so it is given a high priority in term of educational policies and planning. However, as the last Ministerial Conference rightly underlined, TVE is beset with twin dilemmas of high per capita cost and productivity. The capital costs of TVE are pushed to still higher levels as public institutions struggle to keep pace with changes in technology. And the articulation of TVE with the demands of the labour market continues to be a perennial problem in many of the countries.

On the positive note, collaboration between technical and vocational education and industry in the actual design and delivery of programmes is growing in all countries. In fact, this is progressively becoming a feature of several systems, for updating curriculum, equipment and facilities, and for introducing new progranmne delivery approaches. At the same time, new technologies are having a profound impact on the technological processes of the work-place; and improved work practices and innovations are bringing about significant improvements in production quality and efficiency.

With the fast transition of countries into the information era the traditional concept of technologies is also changing rapidly. This is resulting in the work place really becoming the focus of attention of all education and training. Learning for it is assuming paramount importance. Attempts have already been made in some countries to respond to this challenge by integrating elements of traditional disciplines into one single course (for example, mechatronics based on mechanics and electronics). Japan has been the leader in initiating this innovation. In Australia and New Zealand there is a growing emphasis on preparing a multi-skilled work force, with emphasis on key competencies, on providing the job experience required for upskilling, on creating mechanisms for the recognition of prior learning and credit transfer and introducing competency-based training. Promoting retrainability and providing a range of different pathways to facilitate and maximize opportunities between education and training sectors and inter-relationships between the pathways is also gaining momentum. In many other countries such as Australia, Japan, the Republic of Korea and Singapore, training content is selected not only for specific jobs but for job clusters and for transfer to jobs in related areas.

Another general trend relates to greater flexibility in course offerings to adjust to frequent changes emanating from innovations and the provision of broad-based education in order to enhance the ability to pursue continuing education. Course designs are moving away from inflexible, fixed structures towards newly evolving mixes of core and elective components as well as competency-based training, so they remain responsive to the needs of a rapidly changing work-place. Priorities in curriculum planning are also changing with a greater emphasis on multi-skilling, the interfacing of education and productive enterprises, entrepreneurship, and life long education. In China, a major innovation relates to the formulation of a mechanism of leadership for coordinating government sectors like education, labour and employment and various industry and technical departments to define goals and standards of TVE and for joint evaluation of graduates to ensure employability.

This mechanism apart form guiding on the demand of the employability. This mechanism apart from guiding on the demand of the employment sector also enables education and training sectors to match their output.

In countries such as Republic of Korea, Thailand, Philippines, Malaysia and Indonesia there are sandwich courses, post-institutional training, the establishment of corporate training centres to provide both off and on the job training, as well as an increasing industrial sponsorship to specialized facilities in training institutes. In India, Pakistan and Bangladesh there are the mechanisms of Advisory Councils for Technical and Vocational Education, and Technical Teacher Training Institutes (or Colleges) have been specially set up to provide for the increasing numbers of technical education specialists required in curriculum development, material preparation, new programmes delivery approaches and for the management of technical institutions. Undoubtedly, there is still room for further improvements, and bold initiatives in these countries to increase their productivities and competitiveness, through more emphasis on technical and vocational education.

Training programmes are also undergoing major restructuring in numerous ways, increasingly utilizing the work-place itself for upskilling, upgrading and pre-entry training. New career paths are being identified in line with restructuring in industry; and the coverage of programmes is being extended to such newly emerging areas as micro-electronics, cybernetics, informatics, networking, communications, electronics and mechatronics. In many countries the concept of employment related key competencies is being increasingly pursed regardless of the education and training pathways the students will follow. For each competency, say in mathematics, scientific and technological understanding, problem solving, etc. educators in different training sectors focus on the desired outcome and develop curriculum and teaching materials accordingly.

Such developments notwithstanding, in many countries of the region, there is a growing concern about the access especially of girls and women and the quality of technical and vocational education. Some recent initiatives to improve access include greater emphasis on educational and vocational guidance. To maintain quality, the setting of minimum standards in core or key areas of each course and the use of competency-based approaches in the measurement of studies achievement and outcomes are being increasing practiced. Another promising development relates to curriculum design moving away from an emphasis on theoretical aspects alone to the greater integration of theory and practice, with a focus on the importance of quality work practices.

Technical and vocational education has always been an important component of UNESCO's consecutive Medium Terms Plans. The basic objective of this programme is to support the efforts of Member States to link education systems more closely to the world of work and to promote the expansion and improvement of technical and vocational education in the light of changing employment needs. Special attention is given to curriculum reform, guidance and counseling services, materials development and to the training of specialized educational personnel.

At the regional level UNESCO has been:

1. Promoting intellectual collaboration among institutions of technical vocational education to pool resources to solve problems of mutual concern and to strengthen national capacities to respond to challenges posed by rapid advancements in technology;

2. Stimulating the introduction of innovative teaching methods and helping Member States to introduce new programmes which correspond to new technologies being used in industry, business and agriculture;

3. Preparing for the exchange of information in technical and vocational education including the area of education and work through technical advisory services, study abroad and publications;

4. Supporting experimental projects in technical and vocational education particularly related to rural development ; and

5. Assisting in the training of key personnel through mobile training teams in selected areas of national priority in technical and vocational education.

With a view to improving the effectiveness of our regional actions in this important area it has now been made an integral part of the Asia Pacific Programme of Educational Innovation for Development (APEID). This programme now serves, as most of you may know already, 29 Member States in this region through 199 Associate Centres. These centres are currently being reorganized around key themes, on of which undoubtedly will be TVE involving renewed institutions from the Member States for regional and sub-regional work in this key field.

As recommended by the last MINEDAP, UNESCO is exploring avenues to secure additional funding for its programme in TVE through extra-budgetary resources. We count on you full cooperation and support in this regard.. Many of the Member States represented here including our generous hosts already provide voluntary contributions for APEID. We request you very kindly to continue your solid support, raise the level of your contributions as well as start providing extra-budgetary resources in case you are not already doling so to enable us to improve and expand our actions in this key area of importance.

At the international level, in 1992 UNESCO launched an International Project on Technical and Vocational Education (UNEVOC) in co-operation with the Government of Germany, United Nations Specialized Agencies and NGOs interested in the reform of technical and vocational education. This project focuses on exchanging information, research and experiences on policy and programme issues in technical and vocational education through a network of cooperating institutions.

The various elements making up the programme aim at :

a. Fostering the international exchange of ideas, experience and studies on policy issues;

b. Strengthening national research and development capabilities;

c. Facilitating access to data bases and documentation;

d. Promoting innovations in staff development;

e. Supporting international cooperative actions.

UNEVOC is basically a cooperative endeavour of Member States sharing a common need to further develop and improve their technical and vocational education and training. The principles behind UNEVOC's programme are based on participating Member States' national development goals and human resources development policies, taking due account of changes in science and technology.

UNESCO will continue its policy to support the initiatives and efforts of Member States for reforms in technical and vocational education by aligning and articulating it more effectively with the world of work. UNESCO has carefully noted the important concern expressed by several delegations during the last Ministerial Conference concerning the promotion of stronger links between general education and technical and vocational education (TVE), and between TVE and industry, agriculture and other fields, both within each country and across the region. UNESCO intends to continue to accord a high priority and appropriate resources to education and the world of work and TVE, in general, and to UNEVOC, in particular.

UNESCO will continue to assist the Member States as in the past in strengthening national capacities through key coordinating and catalytic national and regional interventions. UNESCO will encourage Member States to: promote the mutual recognition of qualifications in cooperation with industry; support the cooperative development of curricula and learning materials in TVE; develop appropriate credit transfer, twinning arrangements, articulation and recognition, and procedures within and outside the region. UNESCO will also try to assist in the exploitation of open learning approaches to deliver TVE programmes to areas for which access is currently restricted.

UNESCO is always looking for, and is receptive to, suggestions for improving the articulation and interface between technical and vocational education and industry, at large, so that the resourcing for TVE can be maximized. Kindly share with us your recommendations and suggestions for increased regional cooperation UNESCO firmly believes in improving the access, efficiency, quality and value-addedness of vocational education and training programmes in the region in order to raise the productivities and competitiveness of the countries both individually and collectively. Let us pool our resources together to invigorate the systems of technical and vocational education in the region through pursuing regional cooperation in this important field effectively and innovatively.

SECONDARY EDUCATION IN AUSTRIA

by Helmut Aigner,
Federal Ministry of Education
and Arts, Vienna

1. The Societal and Political Context

1.1 What is Secondary Education?

Following the CDCC definition, secondary education in Austria comprises grades 5 to 13, as differentiation in programmes starts after the first four years of compulsory schooling. The legal basis of the school system (excluding universities as well as agricultural and paramedical education) is the *School Organisation Act (SOA)* of 1962, which was passed simultaneously with a number of other school laws as well as an amendment to the Constitution which makes any change in national school law subject to a requirement of a *two-thirds majority in Parliament*. It might be expected that this rule could easily lead to petrifaction of the school system; but the required broad consensus on desirable changes is frequently possible, so that the SOA has been amended on an average every two years. It is true, however, that evolution rather than revolution has been the rule - a tradition that goes back several centuries.

Compulsory schooling, which had previously covered the age-group from 6 to 14 years, was extended to the age of 15 years in 1962.

The SOA does not use the term *secondary education* as such; rather, it defines a structure of two dimensions: the area of education (general, technical/vocational, teacher training) and its level (compulsory, intermediate, pre-university, non-university tertiary). The non-university tertiary level, which is currently represented only in the fields of teacher training and social work, is on the verge of being significantly expanded; it is, however, outside the scope of the present report. Levels as defined by the SOA do not necessarily correspond to age levels; indeed most schools beyond the compulsory level are open to adults of any age in the form of evening classes etc.

General education comprises schools at the following levels:

a. compulsory:

-elementary school (*Volksschule*, also termed Grundschule; grades 1 to 4, exceptionally to 8, see Chapter 5),

-modern school (*Hauptschule*, grades 5 to 8),

-pre-vocational school (*Polytechnischer Lehrgang*, grade 9),

-special schools (*Sonderschulen*) for the severely handicapped (grades 1 to 8);

b. pre-university:

-grammar school (*allgeneinbildende hohere Schule* or *AHS*, grades 5 to 12),

-upper-cycles grammar school (*Oberstufengymnasium* and -*realgymnasium*, grades 9 to 12),

-special grammar-school types for those gifted in art, music, sports etc., up to grade 13).

It will be seen that the special schools and a negligible number of elementary schools straddle the primary and secondary levels, while the grammar school straddles the compulsory and post-compulsory periods. The grammar-school curriculum is conveniently divided into a lower cycle (grades 5 to 8) and an upper cycle (grades 9 to 12)..

Technical/vocational education comprises schools at the following levels:

a. compulsory:

-part-time vocational schools (Berufsschulen, grades 10 to 11 or 12 or 13);

b. intermediate:

-full-time vocational schools (*berufsbildende mittlere Schulen*, grades 9, 9 to 10 or 11 or 12);

c. pre-university:

-technical schools (*berufsbildende hohere Schulen*, grades 9 to 13).

It will be seen that the first year of both full-time vocational and technical schools falls within the period of compulsory schooling.

Part-time vocational schools are listed at the compulsory level, since everybody, irrespective of age, who is under an apprenticeship contract, must attend such a school during 20 to 30 per cent of the working week (*"dual system"* of vocational education). The enterprise-based part of training under the dual system is not normally included when secondary education is referred to ; however, it is subject to detailed legal regulation in the Vocational Training Act and subsidiary Ordinances.

In the classification of technical-vocational schools a third dimension, viz. of branches, is used, reflecting the structures of the world of work: industrial schools, crafts schools, commercial schools, hotel and catering schools, domestic-science schools, schools of social work, paramedical schools, schools of agriculture and forestry. Many of these branches have up to several dozen subdivisions.

Non-university *teacher training* comprises schools at the pre-university level only:

a. normal schools (Bildungsa Swtalten) for nursery-school teachers and para-educational staff (grades 9 to 13).

Again the first year falls within the compulsory-schooling period.

1.2 Administrative Organisation

The administrative orgainisation of the schools defined by the SOA is laid down in the Constitution as amended in 1962 and in the School Inspection Act of the same year. While Austria's federal constitution provides for an even distribution of powers between federal authorities and the nine provinces, *education is by and large a federal matter*, with Parliament making the laws and the Federal Ministry of Education and Arts administering them.

The following matters are, however, *in the hands of the Provinces:*

a. chartering and funding of compulsory-level schools; this may be delegated to municipalities, and all teachers' salaries in general schools and 50 per cent of teachers' salaries in vocational schools at this level are refunded from federal coffers;

b. preparation of syllabi for the compulsory-level schools on the basis of Ministry guidelines;

c. regulation of the school year and the school day within rather narrow limits set by the Ministry;

d. personnel matters including hiring of staff. For the non-compulsory-level schools, appointments are made by the Federal Minister (for pre-university school heads by the Head of State) from a short-list prepared at the provincial level.

Each of the provinces (Lander) has its *Provincial School Board,* which is nominally a federal agency under the Federal Ministry of Education. The short-lists mentioned above as well as decrees on matters of detail are prepared by these politically appointed boards (membership is in proportion to the respective strength of the political parties in the provincial diet) without federal influence, and they must also be heard on matters of proposed syllabi, while in other matters tenured civil servants carry out instructions from the Ministry as well as school inspection and first-instance handling of appeals in matters of non-promotion, final-examination failure etc.

The provinces are subdivided into districts (minimum 4, maximum 25), each with its District School Board. The latter's composition is analogous to that of the Provincial School Boards, and it fulfills some of the above-mentioned functions for the compulsory-level general schools.

The following *special structures* exist for some segments of the system:

a. In Vienna and its 23 districts a single body is both Provincial and District School Board.

b. For historical reasons a small number of pre-university schools (four industrial schools, the thirteen residential grammar schools and one normal school) come under the direct authority of the Federal Ministry without an intervening Provincial School Board.

c. The administrative structure of pre-university schools of agriculture and forestry is similar, but responsibility is shared by the Federal Ministries of Agriculture and Forestry (chartering, funding, personnel) and of Education and Arts (pedagogical matters). Intermediate-level schools of agriculture are controlled solely by the provincial diets and administrations (not the Provincial School Boards).

d. The first year paramedical curricula is considered a full-time vocational school while the remainder is currently controlled directly by the Federal Ministry of Health, Environmental and Consumer Protection. Agreement has been reached in principle to bring these schools into the regular pattern.

e. The Federal Ministry of Defence operates a logistics school.

Private schools may be established freely, and they are basically subject to inspection in matters relating to public safety only. However, as the general public sets great store by official certificates and diplomas, it is the aim of most private schools to obtain the right to issue such documents through *accreditation* by the Federal Ministry. Accreditation is only granted if the school complies with all laws and ordinances pertaining to public schools, including curricula and staff qualification rules. Accredited non-profit private schools are usually heavily subsidised, usually by making the teaching staff federally paid civil servants, thus ensuring affordable tuition fees.

A more modest aim of some private schools (often of "alternative" persuasion) is Ministry recognition of their suitability for fulfilling pupils' compulsory-schooling obligation. Pupils of compulsory-schooling age who attend such a school are not required to sit for publicly administered examinations at the end of each school year, as pupils attending non-recognised private schools as well as children receiving instruction at home would have to.

Most accredited private schools are operated by the Roman Catholic Church and other religious bodies, or by employers and employees' organisations.

1.3 Recent Developments

The system as a whole shows a high degree of centralisation, which is a boon to pupils transferring from one school to another of the same type; on the other hand it shows many of the drawbacks of a centralised bureaucracy. That is why plans are under way to delegate more power to individual schools, e.g.:

a. the power to make their own syllabus for a small percentage of the curriculum;

b. the right to decide on the subjects requiring reduced class sizes and hence splitting of regular classes, subject to overall budget limitations;

c. significant extension of the cost limit beyond which an investment needs to be authorised by the Ministry.

The short-listing process as practiced by the Provincial School Boards has come increasingly under fire in the last decade. While minimum requirements are laid down by law, it has been charged that the decision among candidates for a headship or inspectorship and indeed sometimes for a teaching post was often based more on party affiliation than on pedagogical and administrative aptitude. In response to these charges, various systems of objective assessment of suitability have been explored, and it is intended to permit representatives of teachers, pupils and parents at the school in question to make an initial proposal, which the Provincial School Board would be allowed to alter only after showing cause.

Pupils dropping out of a pre-university-level school after failing to be promoted to the next grade frequently opt for training at a non-recognised private school, followed by a publicly administered *extra-mural final examination* for university access. Until recently, this examination could not be taken before the date when the pupil would have been ready for it if he had stayed in school and repeated the failed grade. This limitation, which had been criticised as preventing the private schools from proving that they could do better than the public sector, has now been dropped, so that lost time can now be made up for.

1.4. Diagram of the Educational System

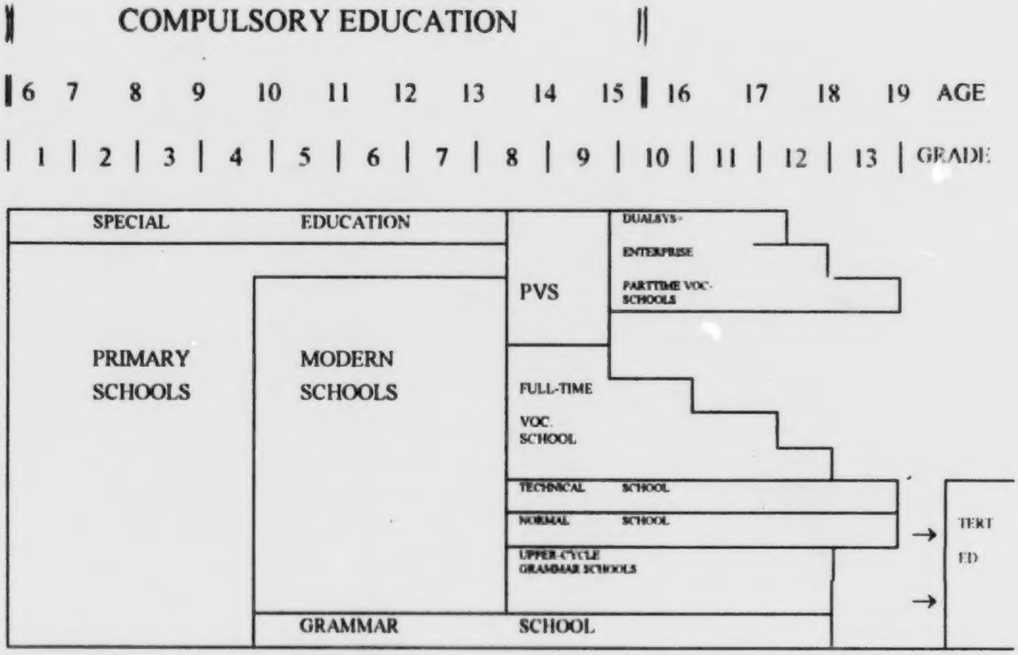
Because of its age-based structure this diagram cannot show some types of schools which are considered secondary:

a. schools (evening classes) for adults;

b. upgrading courses from one technical/vocational level to the next higher level;

c. technical/vocational updating courses;

d. two-year (exceptionally three-year) colleges for grammar-school leavers desiring the supplementary qualification of technical-school leavers.


COMPULSORY EDUCATION
6 7 8 9 10 11 12 13 14 15 16 17 18 19 AGE
1 2 3 4 5 6 7 8 9 10 11 12 13 GRADE
SPECIAL EDUCATION
PRIMARY SCHOOLS
MODERN SCHOOLS
PVS
DUALSYS-
ENTERPRISE
PARTTIME VOC-SCHOOLS
FULL-TIME VOC. SCHOOL
TECHNICAL SCHOOL
NORMAL SCHOOL
UPPER-CYCLE GRAMMAR SCHOOLS
GRAMMAR SCHOOL
TERT ED

PVC=Pre-Vocational School

2. The Process of Policy-making and Innovation

2.1 Decision-Makers

The role of Parliament and of federal and provincial administrative bodies in education has been outlined in Chapter I. In order to achieve a broad national consensus in matters of education, every potentially interested organisation is formally heard before a bill is submitted to Parliament or before a syllabus or other ordinance is signed by the Federal Minister. These organisations, many of which have a federal structure reflecting the structure of public administration, include teachers', parents', pupils', employers' and employees" organisations, minority councils and special interest groups, as well as other Ministries, Provincial Governments and Provincial School Boards.

In addition, a permanent School Reform Commission uniting representatives of these groups acts in an advisory capacity to the Federal Minister. There are sub-committees of this Commission as well as special advisory boards dealing with specific questions.

Of the three ways of introducing a bill into Parliament, viz. cabinet proposal, motion from the floor, and plebiscite, the first is by far the most common. Such initiatives are most frequently conceived within the Ministry, but proposals from outside (e.g. by teachers, parents, employers' and employees' organisations and the media) may supply the initial spark.

The Minister is responsible to Parliament. In addition, a Constitutional Court ensures that Acts of Parliament do not violate the Constitution and that Ordinances do not exceed the mandate given in the Act on which they are based. Redress against wrongful administrative measures is available through an Administrative Court.

The structures described in this section have mostly remained static over the last few decades; only the involvement of pupils' organisations dates from the 1970s and is still growing.

2.2. Support Services

2.2.1 Data Collection and Documentation

This is available on request from the Federal Ministry, which has statistics and documentation departments. The support of the Central Statistical Office can also be solicited. The demand for these services from schools is low.

2.2.2. Educational Research

Educational research is carried out in both free and commissioned form. Major carriers include universities, institutes of further teacher training, and research institutes of employers' and employees' organisations.

A Centre of Pilot Projects and School development attached to the Federal Ministry unites researchers and administrators and acts as an interface between research and innovation.

Among areas of research of current interest are the transitions from school to work and to university as well as multi-cultural education.

2.2.3 Curriculum Development

The elaboration of first drafts of curricula is entrusted to project groups composed exclusively or mainly of teachers. The opinion of erest groups is heard before a final version is prepared by Federal Ministry officials and submitted for the Federal Minister's signature.

2.2.4 Guidance and Counseling

Educational counseling is undertaken by a specially trained and regularly re-trained teacher at each school; outside help is available from departments of the Provincial School Board and of the Federal Ministry. Vocational counseling, on the other hand, is organised by the Federal Ministry of Labour, whose counselors visit classes, particularly terminal ones, and are also available in their offices.

2.2.5 Educational Tests and Examinations

Most tests, including final examinations, are set by individual teachers. Quality assurance in this field is the business of heads of schools and inspectors. Standardised tests exist only as an aid for primary-school teachers in deciding aptitude for the grammar school and for the entrance examination of full-time vocational and technical schools. Elaboration of these tests is commissioned by the Federal Ministry's psychology department.

2.2.6 Psychological and Medical Assistance; Social Work

Psychological assistance to pupils and teachers is afforded by officers in special departments within the Provincial School Boards and the Ministry. They do not become active on their own but honour requests for help.

Depending on their size, schools have full-time or part-time resident physicians. There are also medical departments within the Provincial School Boards and the Ministry.

The welfare authorities may become active in social work in the schools if their help is requested, though this is rare.

3. Financing and Budgeting

3.1 Funding Bodies

The *responsibility* for financing the public schools lies with public (federal, provincial, municipal) authorities as described in Chapter I. *Criteria* for financing include the type of school concerned, numbers of pupils and of teachers, volume of space to be heated etc., while pedagogical evaluation plays no role in funding. Raw values thus arrived at are subject to correction for inflation, permanent special needs (e.g. extra heating cost for exposed locations or poorly insulated premises) and necessary re-investment.

As explained in Chapter I, accredited *private schools* have the salaries of their teaching staff paid by federal authorities; all other costs must be met by tuition fees and voluntary contributions.

3.2 Costs Incurred by Parents

Publicly financed schools may *charge pupils* for meals, for lodging and for supervision during free afternoons; these services are provided by comparatively few schools, as residential schools are rare and the school day ends early enough for many pupils to return home for lunch.

Textbooks are free to pupils and non-returnable. Only literary texts, which exist in cheap editions, as well as *auxiliary material* such as exercise-books and compasses, must be paid for by parents. *Transport* between the home and the schools is also free, passes for public transport being underwritten by public authorities; parents only incur transport costs and incidental expenses for school outings etc. All benefits also apply to pupils in private schools. With the exception of a few private schools, school uniforms do not exist.

Pupils beyond compulsory school age, as well as all pupils in residential schools, are entitled to non-repayable federal *grants* if their average marks are better than 2.8 (corresponding to C+, see Chapter VIII) and parental income is below a prescribed limit.

3.3 Statistical Data

The following tabulation lists federal budgetary provisions for education (excepting universities) in absolute figures (*million schillings*) and as a *percentage of the federal budget.* Because of the large proportion of expenditures effective in the whole education sector, it is not possible to quote figures relating to the secondary sector only. The higher percentages in the period 1970 to 1985 are explained by a major expansion programme, particularly in technical/vocational education, which has since stabilised.

1970	1975	1980	1985	1990	1991	1992	1993
8,736	16,795	26,966	37,982	46,139	50,470	52,035	57,656
8.60%	8.54%	8.80%	8.17%	7.08%	7.45%	7.02%	7.30%

Costs per pupil incurred by federal authorities have developed as follows (figures are schillings per pupil per year, *adjusted for inflation*). Note that the figures include only teachers' salaries for the compulsory general schools, and only fifty per cent of these salaries for the part-time vocational schools, where each pupil spends only 20to 30 per cent of the work week (see Chapter I).

	1976	1981	1986	1991
Grammar schools	18,654	20,332	24,603	27,774
Compulsory general schools (both priamry and secondary)	9,703	12,618	15,408	16,925
Full-time technical/vocational schools (industrial)	35,557	33,713	33,229	34,302
Full-time technical/vocational schools (domestic science)	21,494	23,850	27,942	33,978
Full-time technical/vocationa schools (commercial)	14,358	17,820	20,772	25,284
Part-time vocational schools	2,085	2,183	2,464	3,117

The lion's share of the increase is due to an improved teacher-pupil ratio: the number of teachers in federal employment rose by 39 per cent from 1982 to 1991, while the number of pupils taught by them only increased by 14 per cent.

4. School and Society

4.1. The World at Large

Much of the interplay between the school system and the social environment has been dealt with in Chapter I. *Relations between individual schools and the outside world* are less developed because of the concentration of decision-making powers in the hands of central authorities. It is hoped that the coming trend of increased school autonomy will make for enhanced external relations. This does not, however, mean opening the schools to those who would see them as a market, since the law forbids advertising in schools for any purpose not germane to education.

Individual schools do build up outside contacts through *theme projects and outings*, though the impact of these contacts is difficult to gauge. It is probably greatest in the pre-vocational schools, where such activities, particularly visits to business and industrial enterprises, form a major part of the curriculum.

One area where relations are intensive and institutionalised is the interface *between technical/vocational schools and enterprises*. The staff of part-time vocational schools and pupils' trainers in enterprises co-ordinate their efforts under the dual system, and full-time industrial schools have advisory boards where, besides pupils, parents and teachers, employers and employees as well as other interested parties are represented. For teachers with a foot in both worlds see Chapter IX.

4.2 Parents

Parents were first formally integrated into school life by the School Instruction Act of 1974, though parents' associations at the school, provincial and national levels existed well before that date. Every school has an elected *School Council* with equal representation of *pupils, parents and teachers*, which acts in an advisory capacity to the head. Its decision-making powers include passing of school rules but otherwise cover mostly marginal matters at present. Extensions are, however, likely in the current drive towards increased school autonomy.

After the teachers of a school have made their selections among the government-approved *textbooks*, parents must also be heard before the selection is validated by the Provincial School Board. Parents can also decide the type of *afternoon supervision* offered by a school. For their role in deciding the length of the school week, see Chapter V.

At the regional level, while some *members* of both the *Provincial and District School Boards* must be teachers, there must also be at least the same number of parents of schoolchildren.

5. Administration and Organization

5.1. Streams and Options

5.1.1 Grades 5 to 8

A comparison of percentages of pupils attending the different types of school in this range is given below for the years 1982 and 1992.

	1982	1992
Upper primary school	0.16%	0.04%
Special schools	3.27%	2.67%
Modern schools	67.11%	68.29%
Comprehensive school	7.97%	nil
Grammar school	21.47%	29.00%

Upper primary schools are attended by pupils in extremely sparsely populated areas. Rather than the subject teachers typical of all other secondary schools, they have class teachers, and classes may be composed of pupils in different grades. Only 167 pupils are affected, and if the current trend continues, these schools are likely to disappear in the very near future.

Special schools are reserved for the physically and mentally handicapped. The current trend of integrating such children into regular classes is expected to accelerate in the next few years.

Pupils are admitted into the *modern school* on successful completion of grade 4. To be admitted into a *grammar school*, marks in German, reading and mathematics must be "1" (A) or "2" (B); in case of a "3" (C) the pupil needs a recommendation by his or her primary-school teachers. Admission to grammar school is denied, parents may appeal and an entrance examination may be held.

The pilot projects for *comprehensive schools* tabulated in 1982 were subsequently terminated when the required two-thirds parliamentary majority for their permanent establishment could not be attained. The early selection inherent in the current system is mitigated by almost identical curricula of the modern school and the grammar school in grades 5 to 8, by transfer options at the end of each grade for pupils with above-average achievement, and by the transfer options open to all pupils after grade 8 (see section 2 of this Chapter). As the admission requirement for the grammar school is not very selective, up to 70 per cent of the age cohort attend grammar school in some districts of large cities, whereas in the country the modern school is much more popular, since the nearest grammar school frequently requires commuting to the district town.

Majority attendance of grammar schools is considered undesirable by many, particularly since the *modern school* offers differentiation by *achievement groups* ("setting") in German, the modern language and mathematics, with frequent opportunities for re-assignment. Of the several proposals for reform, none has yet emerged as a clear pattern for the future.

The only *differentiation within the grammar school* comes in grade 7, where one stream starts Latin, while another features extra mathematics and handicraft and a third has extra chemistry, music and handicraft, but both of these may still start Latin in grade 9. Latin is a requirement for many university studies including law and medicine.

5.1.2 Grade 9

A comparison of percentages of pupils attending the different types of school in this grade is given below for the years 1982 and 1992.

	1982	1992
Pre-vocational school	19.75%	22.24%
Full-time vocational school	29.64%	25.80%
Technical school	20.01%	28.98%
Normal school	1.22%	1.73%
Grammar school (short)	14.36%	15.41%
Grammar school (long)	5.02%	5.84%

The *pre-vocational* school was created together with the provision for a ninth year of compulsory schooling in 1962 as a compromise between advocates of adding a year to the primary and to the modern school respectively. Intended as a transitional year for pupils going into the dual system of training after grade 9, it is the only school for that grade which requires only a minimum age rather than successful completion of grade 8 (plus an entrance examination). Pupils having these qualifications frequently prefer to enroll in another type of school, which they leave after a single year, thus contributing to spurious drop-out figures there and to disappointing enrollment figures in the pre-vocational schools.

Full-time vocational schools offer both short (1 to 2 years) and long (3 to 4 years) curricula. While the former afford semi-skilled training, the latter provide training at the skilled-worker level. *Technical schools* (frequently under a single roof and sharing the same head with full-time vocational schools in the same field) provide 5-year curricula leading to both university access and qualification at technician level. *Normal schools* offer curricula leading to certification for nursery-school teachers and para-educational staff (see Chapter IX) as well as university access. The entrance examination into all these schools is not very selective: the proportion of successful candidates is over 80 per cent in the fields of hotel and catering occupations, agriculture and forestry, and between 92 and 98 per cent in all other fields. Given the limited reliability of medium-term labour-market forecasts, no attempt - other than persuasion by counseling officers - is made to limit the number of pupils in fields with poor job prospects.

Pupils of *grammar schools* who do not wish to transfer to one of the above-mentioned types pass into the upper cycle by regular promotion from grade 8 to grade 9. Pupils who wish to transfer into grammar school after modern school either need above-average marks or an entrance examination. Because of the considerable number of such pupils the system provides grammar schools consisting of an upper cycle only. Both types of grammar school afford university access.

5.1.3. Grades 10 to 13

The proportion of pupils who drop out of the education system on completion of compulsory schooling has dropped steadily from 18.4 to 1.1 per cent between 1971 and 1991. Because of the different duration of curricula in this age bracket, absolute figures rather than percentages are given below.

		1982				1992		
Grade	10	11	12	13	10	11	12	13
Dual system	65,615	62,395	57,991	11,781	47,417	46,119	45,134	8,728
Full-time vocational school	18,368	14,137	2,244	2,565	12,525	9,712	3,021	3,886
Technical school	28,231	14,524	13,667	12,544	19,401	17,567	17,662	18,170
Normal school	1,246	1,144	1,267	-	1,400	1,199	1,146	1,184
Grammar school (short)	5,454	5,417	4,537	75	4,236	4,102	3,804	151
Grammar school (long)	13,837	13,019	11,723	34	11,395	11,109	10,149	32

The overall *drop in enrollment* has demographic reasons, live births in 1966 being more numerous by 47 per cent than in 1976. Other figures that may appear unusual are caused as follows:

a. In both the dual system and the full-time vocational schools, the curricula of different branches are of unequal duration (2 to 4 years for the former, 1 to 4 years for the latter).

b. For the drop between grades 10 to 11 in full-time vocational and technical schools see section 2 of this Chapter.

c. The normal school curriculum was extended by one year, and the level from intermediate to pre-university, between 1982 and 1992.

d. Grade 13 in grammar schools exists only in sub-types for the specially gifted; see section 6 of this Chapter.

The *dual system* leads to qualification at the skilled-worker level. Parents obtain an apprenticeship contract for their children with an employer in one of over two hundred apprenticeable trades (industry, crafts, business). These contracts are subject to both legal regulation and collective bargaining. Apprentices are trained on the job under syllabi decreed by the Federal Minister of Economic Affairs, and released to the part-time vocational school, normally either for one day per week or for an eight-week course every year. The decision between the day-release and block-release systems is the school authorities; it is based on commuting distances, which in turn depend on population density and the number of apprentices in a given trade.

The minimum entrance age for the dual system is 15 years; there is no upper age limit, but attendance at the part-time school is compulsory unless previous comparable full-time schooling can be proved. Two achievement groups exist in some subjects.

Austria is characterised by a preponderance of *small and medium-sized companies*, with 70 per cent of all enterprises having fewer than 5 staff and 97 per cent fewer than 50. This is why the part-time school offers apprentices not only complementary general and theoretical technical instruction but also breadth in practical work by means of school workshops, while depth is contributed by the employer. For the same reason the share of the part-time school in the dual system has recently been increased from 20 to 30 per cent of the work week in some high-technology trades, and other trades are likely to follow.

Since both the dual system and the full-time vocational schools produce skilled workers, there is some amount of *competition* between them, though in many trades (e.g. barber/hairdresser, confectioner, chimney-sweep, sailor) no full-time schools exist. Many external factors affect the balance between enrollment figures; thus, when the end of compulsory full-time schooling and hence the minimum age for entering the dual system was raised by a year in 1962, many full-time-vocational-school curricula were also extended by a year to preserve this balance. On the whole, the future of both training systems seems assured.

In all *full-time schools grade* 10 is reached by regular promotion from grade 9.

The *early specialisation* inherent in the structure of upper secondary education is defended by citing

a. the importance assigned to polyvalence in all technical/vocational curricula;

b. a tree structure by which initial training in a fairly broad sector (e.g. building) is followed by further specialisation (e.g. preservation of historic buildings) in the topmost grades;

c. the fact that even if a young person opts to train for a different career at age 18 or 19, he or she is no worse off than if the system had not permitted technical/vocational training before that age.

5.4 University Access

Austrian universities accept every citizen who has successfully completed technical, normal or grammar school; there is *no numerous clauses*. Aptitude tests are only required where special talent is called for (in music, art, sports), and complementary examinations, to be taken at the student's option within the school system or at a university, are required if a prerequisite for a given course of study (Latin, Greek, descriptive geometry, biology, philosophy) was not a subject of the school curriculum. The first degree is a *master's* and can be obtained after a minimum of four to five years' study.

There is *no direct access* to universities from either the *dual system* or the *full-time vocational schools;* however, the system features full-time and part-time upgrading courses offering this qualification. A more direct access from these streams is expected to be made possible by the proposed creation of a system of *three-year tertiary institutions*, which will also, it is hoped,

a. relieve the pressure of seekers of admission to universities,

b. reduce the actual duration of studies, which not infrequently exceeds twice the legal minimum,

c. meet demands of the labour market for a level between the technician and the graduate engineer,

d. be in line with the tertiary systems of most countries of the European Community, for membership in which Austria's application is pending.

5.5 Grade-to-grade Promotion

Pupils are promoted to the next grade if they have not failed any of the compulsory subjects (see Chapter 8). One or two failing marks can be remedied by a make-up examination in autumn, and a pupil's teachers may waive the examination if the failure is in a single subject which will be taught in the next rade and which the pupil had not failed in the previous year, provided his standing in the other compulsory subjects is reasonable. A recent proposal to substitute hard-and-fast rules for this evaluation of each individual case by teachers failed to obtain the required two-thirds majority in Parliament.

5.6 Special Groups

The number of *ethnic minority children* - many of them refugees -has only recently increased to a level where they constitute the majority of pupils in some classes. Bilingual schools are provided for the recognised "resident" minorities, who may also opt for schools where German is the only medium of instruction. Other minorities are aided by crash courses for refugees, by extra instruction in German and/or their mother tongue in the regular schools, and by keeping down the size of "mixed" classes. There are, however, also classes without special support, particularly if they include only one or two ethnic-minority pupils. All measures are still of the ad-hoc type: as young children tend to pick up a foreign language rather quickly, many minority children constitute no problem in the secondary grades, and formal adaptation of the system may not take place until the proportion of pupils needing this kind of support has stabilised at a permanent level.

The following facilities are provided for *gifted children*:

a. schools with extra instruction in art, music, sports or technology; grammar schools of this type add a year to the curriculum in order to allow time off for attendance at art schools, conservatories, sports competitions etc.

b. optional subjects reserved for gifted children (at grammar schools only);

c. the privilege of skipping a grade after due assessment, an option rarely taken because of pupils' ties to their classmates.

Slow learners are catered for by *remedial instruction* in core subjects in all schools and by the differentiation of achievement groups in the modern school and in the dual system. If the problem is of a graver nature - this also applies to the *physically handicapped* -, it may be catered for in a special school, though there is an increasing trend of integrating such pupils into regular classes. Employers are by and large willing to accept handicapped youth into apprenticeship.

Traditionally paid *private tutoring* of pupils, particularly of grammar schools, is fairly prevalent. It is dispensed by older pupils, university students, teachers (though a teacher may not tutor pupils of his own school) and outsiders. This state of affairs has always been deplored, and the blame for it is variously assigned to pupils, parents, teachers and the system as a whole; but no effective solution has so far been found.

6. The School as an Organization and as a Community

6.1 School Rules

There is a set of school rules promulgated by a Ministry Ordinance with optional supplementary rules laid down by a school's tripartite Council. Subjects covered are class attendance, punctuality, excuses for lateness and absence (by parents up to the age of 14 years, by the pupil thereafter), dress ("as required by the occasion"), safety, prohibition of alcohol consumption and tobacco smoking at school (though individual schools may permit smoking in special areas) and notification of the school of changes of address etc. Permissible measures encouraging desirable and discouraging undesirable pupil behavior are exclusively verbal and must not be demeaning.

If a pupil proves incorrigible or constitutes a permanent hazard to pupils, teachers or other staff, he or she may be *expelled* by the Provincial School Board on the motion of the school's teachers; the School Board may extend the expulsion to several or all schools. If the pupil is still of compulsory-schooling age, he or she can be transferred to a special school for the behaviorally handicapped.

Up to 1974 more authoritarian school rules were in force: pupils of all ages had to be excused by parents, and keeping pupils after class was a common punishment. Corporal punishment of pupils had been abolished in the nineteenth century.

6.2 Deviant Behaviour, Absenteeism and Truancy

Deviant or criminal behaviour by pupils is rare enough not to be considered a pressing social problem. As a preventive measure, schools do everything in their power to warn pupils of the dangers of drug abuse. Yet many teachers complain that they must increasingly double as social workers without being fully qualified as such. This burden seems to be a major source of teacher "burnout", reported most frequently among teachers of grades 5 to 9, which has only recently been recognised as a well-defined phenomenon, so that it is difficult to judge the extent of its increase.

While records are kept of pupils' unjustified absence from school, absenteeism and truancy are not felt to be a problem, *attendance* being generally satisfactory even after the end of compulsory schooling.

6.3 Extracurricular Activities, Social Relations

Most parents feel that their children's social relations and hobbies are the *business of the family* rather than the school. Many young people take music or ballet lessons and are active in sports associations, scouting and other youth organisation; they rely on private institutions for dancing and driving lessons, and they may attend open-university classes in hobbies such as photography or crafts.

This does not imply that schools offer no extracurricular activities or social occasions, but except in boarding schools and schools offering afternoon supervision, these do not play the same role as in countries with different traditions. Activities most commonly engaged in include projects in environmental protection, skiing weeks, school dances, and travel in celebration of completion of the course. See also Chapter X.

6.4 Work by Pupils

Work by pupils during holidays is *not allowed during compulsory schooling*. Thereafter pupils in full-time schools may look for *summer jobs* in order to supplement their pocket money or for the life experience, including traveling, which it gives them; or their *syllabus may prescribe* such work, the required period ranging from two to sixteen weeks over the whole curriculum. (In hotel and catering schools, for example, the school year is shortened by one month in order to accommodate this practice period as well as a month of recreation.) Practice periods are compulsory in most full-time vocational, technical and normal schools (in commercial schools they are being introduced on a "recommended" basis), while apprentices under the dual system work throughout the year.

7. The Curriculum

7.1 Formal Parameters

Subtraction of all school holidays leaves a *school year* of 39 weeks (40 in one year out of seven), from which another week may be lost by public holidays. A *six-day school week* is common, but a five-day week may be chosen for a given type of school by provincial authorities, or for an individual school by majority vote of parents. *Apprentices* enjoy six weeks of leave per annum from their jobs.

Class periods are of 50 minutes' duration (45 minutes in classes for adults). Breaks between classes last from 5 to 15 minutes (in technical/vocational schools there may be no break for up to three periods), and lunch breaks are provided if classes continue through the afternoon. The legal limit for *class size* is 30 pupils; in special cases 36, while in certain subjects (e.g. instrumental music, workshops) it may be as low as 4 or 5. Average class sizes are lowest in special schools (1981: 10.9; 1991: 7.3) and range from 21.1 to 31.4 in 1981, from 19.8 to 25.9 in 1991 for other types. The average pupil-teacher ratio has dropped in the same period from 8.5 to 3.8 in the special schools, from 41.0 to 33.7 in the part-time vocational schools, and from approximately 12 to 8 elsewhere.

7.2 Sample Timetables

Only compulsory subjects (including elective) are tabulated. Column headings refer to school types and grades. All other figures are weekly class periods.

Grammar school with early Latin	5	6	7	8	9	10	11	12
Religion	2	2	2	2	2	2	2	2
German	5	5	4	4	3	3	3	3
1st modern lang.	5	4	3	3	3	3	3	3
Latin	-	-	5	5	4	3	3	3
Greek or 2nd ML	-	-	-	-	4	3	3	3
History, Soc. sc.	-	3	2	2	2	2	2	2
Geography, Econ.	2	2	2	2	2	2	2	2
Mathematics	5	4	3	3	3	3	3	3
Biology, Envir.	3	2	2	2	2	-	2	2
Chemistry	-	-	-	2	-	-	2	2
Physics	-	2	2	2	-	3	2	2
Psych., Philos.	-	-	-	-	-	-	2	2
Informatics	-	-	-	-	2	-	-	-
Music	2	2	2	1	2	15	-	-
Art	2	2	2	2	2	15	-	-
Music or Art	-	-	-	-	-	-	2	2
Handicraft	2	2	-	-	-	-	-	-

Physical training	4	4	4	3	3	3	2	2
Electives	-	-	-	-	-	2	3	3

Full-time vocational school for the hotel and catering trades	9	10	11
Religion	2	2	2
German	3	2	3
English	3	3	3
History and culture	-	3	-
Tourist geography	-	2	2
Tourism and marketing	-	2	2
General management			
Business informatics	2	-	-
Accounting	3	3	3
Text processing	3	2	3
Political education and law	-	-	3
Nutrition	1	1	-
Kitchen mgt. and technology	3	3	4
Restaurant management	2	3	3
Menus and drinks	1	1	-
Hotel and catering practice	3	2	
Physical training and animation	2	2	2
Electives	5	5	4

Modern school	5	6	7	8
Religion	2	2	2	2
German	5	5	4	4
Modern language	5	4	3	3
History, Social science	-	3	2	2
Geography, Economics	2	2	2	2
Mathematics	5	4	4	4
Drafting			1.5	1.5
Biology, Environment	3	2	2	2
Physics, Chemistry	-	2	2	4
Music	2	2	2	1
Art, Calligraphy	2	2	2	2
Handicraft	2	2	2	2
Home economics	-	-	1.5	1.5
Physical training	4	4	3	3

Pre-vocational school	9
Religion	2
Social consciousness	2
German	4 - 5
Mathematics	4
Modern language	3
Social science and economics	2
Science in the modern economy	2
Health	0.5
Vocational science and orientation	2

Physical training	3
Seminar (social, economic, scientific or agricultural)	3
Electives	5 - 6

Part-time vocational school for bricklayers and formworkers	10	11	12
Political education	1	-	1
Economics, Correspondence, Accounting	2	2	2
Technical theory	2	2	2
Technical arithmetics	1	1	1
Drafting and design	1	1	2
Practical work	2	2	1

Technical school for power technology	9	10	11	12	13
Religion	2	2	2	2	2
German	3	2	2	2	2
English	2	2	2	2	2
History, Social science	-	-	-	2	2
Geography, Economics	2	2	-	-	-
Political education, Law, Economics	-	-	-	2	2
Physical training	2	2	2	1	1
Maths, applied maths	5	3	4	3	-
Descriptive geometry	2	2	-	-	-
Physics, applied phys.	2	3	4	3	-
Chemistry, environment	2	2	-	-	-
Computer science	-	2	2	-	-
Mechanical engineering	5	3	2	2	-
Eletri. eng. fundamtls	4	3	-	-	-
Metrology and control	-	2	2	3	3
Electrical machines	-	2	2	3	4
Electrical plant	-	-	2	4	4
Electronics, microelectronics	-	-	2	2	6
Design	-	-	2	4	4
Laboratories	-	-	3	7	8
Workshop	9	9	9	-	-

Normal school for nursery-school teachers	9	10	11	12	13
Religion	2	2	2	2	2
Pedagogy	-	2	3	3	3
Special and remedial pedagogy	-	-	-	1	1
Didactics	1	2	3	3	3
Practice teaching	1	2	5	5	5
German	4	3	3	3	3
Modern language	3	3	2	2	2
History, Social science	2	2	2	-	2
Geography, Economics	2	2	2	1	-
Law	-	-	-	-	2

Mathematics	3	3	2	2	-
Physics	-	2	2	2	-
Chemistry	-	2	2	-	-
Biology, Environment	2	2	1	2	-
Health	-	-	-	-	1
Music	2	2	1	2	2
Guitar	2	1	1	-	-
Recorder	-	1	1	1	-
Phythmic education	-	2	-	-	-
Art	2	2	2	2	-
Handicraft	5	2	2	-	2
Physical training	3	2	2	2	3
Home econ., Hygiene	3	-	-	-	-
Traffic education	-	-	-	1	-
Accounting, Group dynamics or Communication	-	-	-	2	-

7.3 Syllabi

Syllabi consist of the following *parts:*

a. general section:
   - aims
   - notes on organisation, content and methodology
   - timetable

b. subject-specific sections:
   - objectives
   - subject matter
   - notes on organisation, content and methodology

Notes on methodology are advisory only; teachers can choose their *teaching methods* freely as long as they attain the prescribed objectives.

Other than prescribing the number of written hour examinations during the school year in the few subjects where they are legal, the syllabi contain no *assessment section*, all matters of assessment being dealt with globally in a separate Ordinance (see Chapter VIII).

Syllabi are comparatively *brief*, so that teachers and textbook authors have considerable leeway in selecting specific subject matter under headings such as "Motors, generators, transformers and converters for direct, single-phase and three-phase current". In vocational/technical syllabi, a printed A4 page will typically cover ten class periods per week for one school year, in other schools two to three.

7.4 Religion

Under the terms of a concordat with the Holy See, religious instruction is *formally* a *compulsory* subject for Roman Catholic pupils in all schools, excepting part-time vocational schools in seven of the nine provinces, where it is optional. The cost of religious instruction is borne by the state. Equal provisions pertain to all other formally acknowledged religions and denominations. As a compulsory subject, religion counts towards a pupil's average; on the other hand, a pupil may withdraw from religious instruction by declaration at the beginning of a school year (up to the age of 14 this is the parents' privilege), thus rendering the subject *de facto* optional. No changes in this state of affairs have occurred since 1945, and none are envisaged.

7.5 Curricular Trends

Recent and current trends in secondary curricula include

a. a *reduction* in the number of *class periods* concomitant with the shortening of the work week (until 1962 pupils in most full-time vocational and technical school carried up to 48 periods per week);

b. enhancements in *modern languages, computer science/informatics* and *environmental science;*

c. an increasing role of *project work*, though for financial reasons there is no team teaching;

d. introduction of *electives;*

e. autonomous *control by the school* over a fraction of the syllabus (see Chapter I).

For the *mechanisms* of curriculum adaptation and innovation see Chapter II.

8. Evaluation and Assessment

8.1 Pupil Assessment

Continuous assessment is the rule throughout the system, with examinations set, administered and evaluated by the teacher concerned. Observation of a pupil's current work may be supplemented at the teacher's discretion or at the pupil's request by pre-announced *oral quizzes* of up to fifteen minutes' duration.

Written *hour examinations* during the school year are only permitted in subjects where written work plays a major role, such as languages, mathematics and accounting, In the higher grades their duration may be extended to two or three class periods. *Short* (up to 25 minutes) *written tests* became legal in nearly all subjects in 1974.

Assessment takes the form of *five marks*, "1" (corresponding to A as used in some countries) being excellent, "4" (D) passing and "5" (F) failing. The definition of the marks is based on

a. achievement in the essentials of the subject,
b. achievement in the peripherals of the subject,
c. originality of the work performed.

Formal final examinations are prescribed at the end of all curricula leading to university admission as well as many (soon to be extended to all) three-year and four-year full-time vocational schools. They take the following forms:

a. practical qualifying examinations at the end of the last year but one (in some technical curricula);

b. a monitored research paper (at the pupil's option in grammar schools; recently introduced);

c. written examinations (2 to 5 hours each) in up to five subjects, some of which may be elective;

d. an examination in technological design, laboratory and/or field work (up to 40 hours, technical curricula);

e. a practical examination (up to 40 hours, full-time vocational curricula);

f. oral examinations (up to 15 minutes each) in up to four subjects (some or all elective).

In some technical curricula there are interdisciplinary oral examinations of up to 25 minutes' duration.

The *examination board* consists of the class teachers and is chaired by an inspector or Ministry official. *Written and practical examinations* are set by teachers. Two different sets of questions are submitted to the Provincial School Board, which selects one and returns it under seal to be broken in the presence of the candidates. The examination is administered and evaluated by the examining teacher, who proposes a mark for majority decision by the board. *Oral examinations* are open to the public (though they are usually only attended by pupils of lower grades). Examination questions are set by the examining teacher and approved by the chairperson; candidates select one of two questions in each subject (vocational/technical curricula) or two out of three (other curricula). Again the mark is proposed by the examiner and voted on by the board.

In case of *failure* at a final examination, up to three further attempts are allowed. Three sittings per year are provided for the purpose. Failure rates are generally low (below 10 per cent at the first attempt).

No *appeal* lies against individual marks in annual reports or final examinations. However, the consequences of failing marks, i.e. failure to be promoted to the next grade or failure in a final examination, may be appealed against with little formality, the appeal being addressed to the Provincial School Board and in second instance to the Ministry. A final appeal to the Administrative Court can only be brought by a solicitor.

Final examinations in the *dual system* are outside the school authorities' control, being set, administered and evaluated by a board nominated by employers' and employees' organisations, the candidates' trainers being excluded. The examination consists of a theoretical and a practical part, the former being waived if the candidate has obtained passing marks in all compulsory subjects of the part-time vocational school's terminal year.

8.2 System Evaluation and the Inspectorate

No national assessment of pupil performance or more extensive formal system evaluation is provided. *Overall performance* is assured by the following means:

a. school inspection including the chairing of final examinations;
b. compilation and publication of statistics relating to achievement;

c. reaction of the authorities to positive and negative outside criticism (for some of the mechanisms provided see Chapter II).

In addition to assessment, *inspectors* also carry out numerous advisory and administrative functions.

8.3 Assessment of Teachers

Like other civil servants, teachers are subject to an assessment of their *overall achievement*, which is composed of assessment in *specific areas*, such as success in imparting knowledge, skills and attitudes, in dealing with parents and in the performance of administrative duties.

Achievement is rated as *above-average, average or below average*. Below-average achievement can only be assessed if a formal warning has not resulted in any improvement. Ratings are proposed by the *head of school* (on recommendation of the division head in schools where these exist; see Chapter IX) and passed, after approval by the competent *inspector*, to an independent *assessment board* whose members are appointed by the school authorities and by teachers' representatives respectively. The board may interview the teacher, who has the right to be represented by counsel or by a colleague of his or her choice. There is a *board of appeals*, and a further appeal to the Constitutional Court may be brought by a solicitor.

After a teacher's initial rating, *no further assessment* takes place unless it is below average or requested by the teacher, the head of school, or the inspector.

A below-average rating in three consecutive years carries automatic *dismissal*, though this is extremely rare. Otherwise teacher's ratings are of consequence only in applications for headships and inspectorships.

9. School Staff

9.1 Senior Staff

All *heads of school* are appointed from among practicing teachers of the type of school in question by the process described in Chapter II. Their function is to ensure the smooth operation of the school, which involves, among other things,

a. implementing school laws, syllabi and other ordinances, and

administrative directives;
b. applying for and spending government funds,
c. inspecting, advising and assessing staff,
d. performing and organising public relations.

As in most cases a newly appointed head has not previously exercised these functions, his or her performance is hard to predict from his/her precious record. Therefore courses in school management are offered by Institutes of Further Teacher Training to heads and, more recently, candidates for headship. A recent proposal, expected to be implemented soon, would make appointments of heads temporary and renewable at five-year intervals on recommendation of the School Council.

A consequence of the above duties is a reduction of the head's *teaching load* depending on the size of the school, the heads of the largest schools being relieved from teaching altogether. Heads also receive extra pay depending on both their seniority and the size of the school.

Most schools of a certain minimum size also have *other senior staff* in one or two of the following categories:

a. an assistant head or administrator,
b. a head of the residential section,
c. division heads (e.g. for different branches of engineering), whose responsibilities include the division's entire curriculum including general-education subjects,
d. department heads for hotel catering services, domestic science and textile processing.

These take over some of the head's functions (though the head still has ultimate responsibility) and enjoy a correspondingly reduced teaching load (though never to zero). Their extra pay is two-thirds of a head's.

9.2 Teacher Training and Recruitment

There are *four pathways* into the teaching profession:

a. modern-school and pre-vocational-school teachers as well as teachers of general-education subjects in vocational schools must have completed a three-year teacher-training college, normally specialising in two subjects;
b. grammar-school teachers and teachers of general-education subjects in technical and normal schools must have a university (master's) degree,

which is obtained after a minimum of 4 years and a half of studying education and specialising in (normally) two subjects, whereupon they undergo a year of supervised practice teaching;

c. teachers of theoretical technical subjects in pre-university-level schools must have a master's degree in the field concerned as well as several years' practical experience in their profession, whereas training in education is assured by in-service courses after they are hired;

d. teachers of practical technical subjects in all schools and of theoretical technical subjects in vocational schools must either have completed a relevant technical school or be qualified master craftsmen. After several years' practice in an enterprise and a brief trial period of teaching (required so that they can be paid in the following phase) they are seconded to a vocational teacher training college for a period of one to three years to study education; on passing the certification examination they return to their schools. Details vary for each specialty and may deviate in some instances from the general pattern outlined above.

The law obliges all teachers to engage in *further training*, though enrolment in specific courses offered by the Further Teacher Training Institutes provided in each province is voluntary. The typical further-training course lasts a week during the school year, and colleagues take over the teacher's regular duties as extra work during his or her absence. The teacher gets his or her fare and expenses for room and board refunded if the course takes place in another town, and the stand-ins get extra pay if a teacher's absence (for any reason) exceeds three days.

For *recruitment procedures* see Chapter II. The last twenty years have seen a gradual shift from teacher shortage to *teacher surplus*, and nowadays there are waiting periods of up to several years for teachers of most general-education subjects, particularly in Vienna and the provincial capitals. The situation is less critical in music and physical training, and in some technological subjects there is an ongoing teacher shortage which can only be resolved by teachers carrying a paid overtime load, which cannot refuse unless it exceeds 25 per cent on top of their regular teaching load.

9.3 Stages in a Teacher's Career

A teacher is first hired on a *contractual* basis; in the current surplus situation this phase may have up to three sub-stages: a part-time contract, a full-time contract for a limited period, and an unlimited full-time contract. Contracts are regulated by civil law and by the Civil Servants (Contracts) Act.

After a minimum of four years' service (part-time periods counting *pro rata*) a teacher becomes eligible for *tenure*. This is granted after satisfactory assessment, provided his or her continued employment is assured. Besides protecting the teacher from dismissal before mandatory retirement age except for cause, tenure means a considerably higher pension, though there is practically no difference in active salary. Even a tenured teacher may, however, be transferred to any other school in the province (compulsory-level schools) or in the whole country (other schools) unless he has reached the next stage.

At least half the permanently assured positions at a school must be "*stationary*", i.e. teachers holding such a position cannot be transferred to another school against their will. The competent School Board awards them on teachers' applications according to set rules.

Roughly at the age of fifty years a teacher becomes eligible for an *honorary title*, which is proposed by the head of school, passed through channels and granted by the head of state.

Unless incapacitated at an earlier age, a teacher may retire after he or she has reached the age of sixty years. Retirement is mandatory at the age of 65 years.

9.4 Teachers' Duties

Teachers in intermediate and pre-university-level schools carry a nominal *teaching load* of 20 "units", which, because of conversion factors assigned to each subject, translate to anything between 17 periods weekly (for languages and technology) and 25 periods weekly (for some practical subjects). In the compulsory-level schools the band-width is somewhat narrower.

Teachers may at any time be appointed to, or removed from, the following *additional functions*, for which they receive a reduction of their teaching load:

a. form teacher (special responsibilities in shaping the attitudes of the pupils in a class; administrative matters pertaining to the class);
b. head of practical training;
c. school librarian or custodian of hardware for a science, sports equipment etc.;
d. educational counsellor (see Chapter II).

Teaching loads are the result of collective bargaining on the basis of a hypothetical *40-hour work week* the balance of time being filled with supplementary duties such as staff meeting, preparation of lessons, correction of homework and examination papers, as well as self-directed further training. However, teachers are *not required to remain on the school premises* for any of these duties except staff meetings. They are also permitted to hold *other jobs* provided there is no conflict of interest or of hours. Second jobs are even encouraged in the case of technical/vocational teachers, because they assure constant updating of the teacher's technical knowledge and skills. Side-jobs may even be offered at the school itself, if it has an attached governmental materials testing centre or the like.

9.5 Teachers' Salaries

Annual salaries listed below are in Austrian schillings, effective January, 1992. They are increased annually after collective bargaining to keep abreast of inflation and of pay rises in the private sector. Scale rises are biennial.

a.	college-trained teachers:	initial	213,262 to 251,118
		average	290,794 to 383,474
		final	428,120 to 575,498
b.	University-trained teachers:	initial	285,978
		average	472,996
		final	711,900
c.	Supplement for heads:	minimum	15,778
		maximum	118,832
d.	Inspectors:	initial	430,402 to 554,848
		final	686,546 to 845,054
e.	University-trained officials:	initial	275,870
		final	986,328(exceptionally 1,180,466)

9.6 Other Staff

Care, animation and supervision of *residential pupils* outside class hours may be a secondary function of teachers, for which they receive a reduction of their teaching load. This function may, however, also be exercised full-time by *para-educational staff* trained in normal schools.

For *school physicians* see Chapter II.

Schools also have *secretarial and accounting staff* (part-time in small schools) and *caretakers*. Cleaning of premises is frequently contracted to outside firms.

10 The European Dimension

10.1 Curricular Provisions

School curricula, textbooks and audio-visual materials stress *European aspects* wherever appropriate, particularly in subjects like history, geography, economics, political education and environment, but also in such matters as international standards and commercial usage.

At least on *European language* other German is a *compulsory subject* in all full-time schools from grade 3 and in an increasing number of part-time vocational schools. Several types have two compulsory European languages, and an extra language may frequently be added as an optional subject. At least one European language is a compulsory examination subject in the *final examination* of most pre-university schools; in the others (industrial, agricultural and forestry branches of the technical school system) it is currently an elective, but there are proposals to make it compulsory there as well.

If Austria's application for *membership of the European Community* is accepted, it must be ratified by referendum. To ensure responsible voter action, the public needs to be informed about the foreseeable consequences of joining, and the federal government is asking the schools to play their part in this effort.

10.2 Extracurricular Activities

In many schools teachers help to *establish pen-friendships* abroad, *school twinning* and *holiday trips* and exchanges. They may call on a department of the Ministry as well as many private organisations for support.

Formal *exchanges of whole classes* for a few weeks during the school year are permitted on principle but frequently encounter financial and administrative obstacles as well as major differences in curriculum. They are most frequently implemented in residential grammar schools and in hotel and catering schools.

Some pupils, again mainly in hotel and catering schools, succeed in going abroad for the prescribed *summer jobs*. Until Austria joins the European Community, bilateral agreements in this field would seem desirable, as work permits for foreigners are otherwise hard to come by.

There are regular national and international *school competitions* on European subjects.

Exchanges of teachers and foreign-language teaching assistants are possible under the terms of bilateral cultural agreements with many European countries. The quotas provided for in the agreements can sometimes not be filled because of a shortage of candidates from abroad, who, if they intend to use their stay to improve their German, may shy away from the supposed non-standard features of Austrian speech.

Austria takes part in the Council of Europe's *Teacher Bursaries Scheme,* granting 50 travel and subsistence bursaries annually to teachers from other member states for participation in short courses of further training conducted in German for Austrian teachers of vocational and technical schools. Austrian teachers in turn participate in courses offered by other countries under the Scheme.

11. Effocoemcu amd Performance Statistics

11.1 Enrollment

Type of school	1972	1977	1982	1987	1992
Upper primary school	42,961	3,964	798	272	167
Special schools (grade 5-8)	13,698	16,774	15,417	9,717	9,817
Modern school	334,759	378,352	316,115	269,830	250,342
Comprehensive school	-	29,954	37,677	-	-
Pre-vocational school	30,489	35,644	32,771	24,831	18,461
Part-time vocational schools	143,124	176,360	197,782	175,908	149,836
Full-time vocational schools	71,798	86,119	71,757	64,699	55,124
Technical schools	33,176	54,999	82,456	95,397	99,077
Normal schools	4,585	6,254	5,277	4,461	11,059
Grammar schools (short: grade 9-12)	18,278	19,795	21,324	19,692	17,514
Grammar schools (long: grades 5-12)	129,895	151,080	155,572	143,098	141,905

11.2 Graduates with the Right to University Access

Type of school	1971	1986	1991

Technical schools	3,339	14,527	16,731
Normal schools	-	33	856
Grammar schools (short:grades 9-12)	10,741	16,574	13,749
Total	14,080	31,134	31,336

11.3 Percentages of Repeaters / drop-outs

Type of school	1991
Primary school (all grades)	1.19%
Special schools (all grades)	4.71%
Modern school	2.17%
Pre-vocational school	9.03%
Part-time vocational schools	2.73%
Full-time vocational schools	9.99%
Technical schools	12.88%
Normal schools	5.43%
Grammar schools (short: grades 9-12)	14.72%
Grammar schools (long: grades 5-12)	5.99%

11.4 Admissions to Higher Education

	1971	1986	1991
Universities, Schools of art	10,082	22,781	22,602
Teacher training colleges	4,795	2,212	2,493
Vocational TT colleges	453	410	356
Social-work colleges	440	271	357
Total	15,770	25,674	25,808
Tranfer rate from secondary school	71.6%	82.5%	82.4%
from technical school	43.1%	44.5%	51.4%
from grammar school	73.6%	91.8%	92.4%

11.5 Proportion of 15-year-old Neither in Full-time Schools nor in the Dual System

1971	1976	1981	1986	1991
18.4%	12.5%	8.4%	4.9%	1.1%

11.6 Unemployment

	1988	1991
Overall	5.3%	5.8%
15-to-18 year-olds	2.8%	2.6%
19-to-24-year-olds	6.7%	6.5%

12. CHALLENGES, PROBLEMS AND PROSPECTS

Challenges facing secondary education in Austria in the remaining years of the century have been mentioned throughout this text. The main areas of effort are summarised below:

a. striking a balance between the degree of school autonomy that will make the system more flexible and facilitate the new roles of secondary schools with respect to the community of the one hand and the amount of centralisation required for the essential unity of the system on the other;

b. carrying the principle of greater autonomy to the level of the individual pupil by enhancing the role of electives, library research, term papers etc., but also in guidance towards self-criticism;

c. provision of improved facilities for pupils whose mother tongue is not German;

d. enhancement of vocational orientation in the upper cycle of the grammar school, particularly in view of the planned major extension of the non-university tertiary sector;

e. enhancement of foreign-language learning both quantitatively and qualitatively, with a long-term aim of bilingualism;

f. an increased role of political, economic and ecological consciousness including the interrelations between these subject areas and with particular stress on European affairs, with special efforts concerning their treatment in textbooks and audio-visual aids.

THE DEVELOPMENT OF TECHNICAL CURRICULA IN AUSTRIA

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Abstract

This paper describes the processes by which technical curricula and syllabi are established in one European country. An attempt is also made to analyse the system of constraints under which curriculum development operates. From the complexity of the interactions described, it will be seen that partial changes are difficult to make without disturbing the balance of the whole system. For the same reason, the transfer of any desirable features from or to the education system of another country may encounter major obstacles.

The paper may also be of interest to students of the internal workings of a bureaucratic system.

1. Special Features of the Austrian School System

1.1 Introduction

Austria is a republic of 7 million inhabitants in central Europe. Its first state-operated technical school was founded in 1758 under the Austro-Hungarian empire, and the following two centuries have seen gradual development into a rather complex system of full-time and part-time schools and curricula[1].

From its inception the system has always been run under the principle that it must constantly adapt to technical progress as well as social development, so that neither its graduates nor their employers would have cause for complaint. This has led to frequent but comparatively small changes, thus obviating the need for major surgery. The cynical philosophy by which technical schools might be established as a catchbasin for underachievers, with their ultimate success in the world of work at best a minor consideration, has been markedly absent from the Austrian school system. As a consequence graduates of technical schools have always enjoyed excellent job prospects.

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[1] For a detailed account of the history of Austrian technical schools, see W. Patzaurek and K. Psenner, edd., bbs-Handbuch: Vorschriftensammlung fur Berufsbildung in Betrieb und Schule, loose-leaf edition, Inn-Verlag (Innsbruck 1961 ff.), sections I. 1, pp. 1 - 67, and I.2, pp. 1 - 75.

Certain features of the present Austrian system which differ significantly from those of other countries and are relevant to the process of curriculum development are listed below.

1.2 Centralization and Decentralization

Although Austria has a federal constitution, legislation and administration in matters concerning technical schools rest almost entirely with federal authorities[2]. Curricula and syllabi are established by the Federal Minister of Education and Arts under the limitations set down by law[3]. Supervision of schools is the responsibility of federal inspectors based at the Provincial School Board in each of the nine lander (provinces)[4]. These boards, while strictly speaking federal bodies, are composed of member of legislators as determined by the most recent provincial election[5].

While any person is entitled to found a private school[6], all private schools desiring to issue state-recognized certificates and diplomas need ministerial recognition, which is only given if the school abides by the regulations pertaining to public schools, including their syllabi[7]. As certain privileges, such as university access and seniority in the civil service, are awarded to the holders of state-recognised certificates and diplomas, and as these qualifications also carry a lot of weight in the private employment sector, the public and state-recognized schools attract far more students than other private schools, Ministerial recognition is also a condition for awarding government subsidies to a private schools[8].

All textbooks used in Austrian schools need the approval of the Federal Minister, which is granted on the recommendation of an independent board of teachers. A major factor in the board's decision is compliance with the pertinent syllabus. Similar regulations apply to audio-visual aids[9].

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[2] For details see the Federal Constitutional Act, Stat Gazette 140 (1920), no. 450, as amended by the Act of 18 July 1962, Federal Gazette 52 (1962), no.215, Articles 14, 14a, 81a and 81b. The language of all publications referred to in this paper is German, unless otherwise noted. Titles of laws and ordinances, as wll as samples of text therefrom, have been translated by the author. Amendments of laws and ordinances are not cited unless they are of significance for the subject of this study.

[3] "The entire administration of the state shall not be carrieed out except within the framework of law". (Federal Constitutional Act (1920), Article 18).

[4] Federal School Supervision Act, Federal Gazeette 61 (1962), no. 240, sections 2 - 4. 18.

[5] Federal School Supervision Act (1962), sections 2, 5, 8. School of agriculture and forestry are not within the scope of the Fedeeral School Supervision Act, the School Organization Act or the Privatee Schools Act, beeing regulated by separatee laws under the Fedeeral Constitutional Amendment of 28 April 1975, Federal Gazett 98 (1975), no. 316. These laws will not be cited, as their provisions relating to curricula are substantially the same as for otheer technical schools.

[6] Private Schools Act, Feferal Gaztte 61 (1962), no. 244, section 3.

[7] Ibid., sections 13 and 14.

[8] Ibid., sections 17 and 21.

The trend toward decentralization of government that is currently sweeping much of the western world has also had its repercussions on the education system. Under the Fourteenth Amendment to the School Organization Act, soon to be published in the Federal Gazette, some sections of syllabi must be reserved for decisions by individual schools. In the case of technical schools, these sections are:

a. alternative specializations, covering approximately one-fifth of the whole syllabus, that can be selected by the school;

b. two hours per week which the school can use to add one or more compulsory subjects or extend existing one;

c. total freedom as regards optional and remedial subjects, provided the school stays within budgetary limits.

The above decisions must be taken by a two-thirds majority of the Tripartite School Committee (an elected body composed of three teachers, three parents and three students). If no such decision is taken, or if the Provincial School Board finds it to be in violation of law, a default syllabus provided by the Ministry comes into force.

Some of the processes described below will have to be modified to ensure compliance with the new regulation.

1.3 The Scope of Curricula

Under the law, each syllabus must consist of the following parts:

a. general educational aims of the syllabus;
b. special educational objectives of individual subjects;
c. guidelines for contents, methods and detailed organization;
d. the distribution of subject matter over the years of the curriculum;
e. the total number of class periods and their assignment to individual subjects ("scheduling table")[10].

The "guidelines" part is frequently subdivided into general and subject-specific sections.

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[9] School Instruction Act, Federal Gazette 197 (1986), no. 472, sction 15.

[10] School Organization Act (1962), section 6.

There is no section dealing with assessment, as all relevant regulations are contained in the School Instruction Act and an Ordinance thereto[11]. The same Act contains all other regulations which are neither specific to a curriculum nor to a subject.

Austrian technical syllabi are rather terse. For example, the syllabus for senior schools of electrical power engineering which covers a total of 8000 class periods, is contained in 30 printed pages[12]. By way of contrast, the most recently published syllabus for a type of general school covers 1000 class periods in 66 pages[13], and some curricula of other countries are far more detailed than that.

The reasons for such brevity are manifold:

a. It is felt that prescribing a teacher's classroom activities down to the individual class period would run counter to the principle of teachers' self-reliance and responsibility[14].
b. Detailed specifications of subject matter incur the risk of becoming obsolete through technical progress, necessitating an amendment of the syllabus. "Color television cameras" is far more future-proof than a list starting with "vidicon, image orthicon,...".
c. In view of the many new or amended technical syllabi which must be created every year, the sheer quantity of text to be managed, down to the chore of proofreading, would require extra Ministry staff in case of major text expansion.
d. In 1989, the share technical syllabi held in the pages of the Federal Gazette was nearly 6 per cent. Expansion in proportion to the general syllabus cited above would increase this share to 53 per cent. As this government publication has a distribution far beyond the field of education and as subscribers resent having to pay for subject matter that is irrelevant to them such an expansion would meet considerable resistance, and there is even some pressure toward further reduction of the volume of syllabi.

1.4 The Systems Approach in School Organization

The organization of the Austrian school system is based on the principle that transition from one type of school to another should be as easy and painless as possible. While under this principle the lowest possible number of different curricula should be striven for, the enormous variety of the world of work would seem to call for a different curriculum for every type of job.

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[11] School Instruction Act (1986), sections 18ff., Asssmnet of Achievement Ordinance, Federal Gazette 106 (1974), no. 371. Under these regulations, continuous assessmeent is the rule, excpt for formal examinations after the last year.

[12] Ordinance no. 412, Fderal Gazette (1986), issue 170.

[13] Ordinanc no. 241, Federal Gazeectt (1989), issue 99.

[14] This is laid down in sction 17 of the School Instruction Act (1986).

The solution lies in a well-articulated system[15] with clearly defined points of transition and the maximum of uniformity compatible with the requirements of job qualification. For example, all senior technical schools (whether in the industrial, business, services or agricultural sectors) have five-year curricula, and all industrial schools (whether in mechanical, electrical, civil, chemical or textile engineering) have the same syllabus in history and social science.

Provisions are also made for curricula that will lead to professional upgrading (e.g. from skilled worker to forman, or from foreman to technician), mostly in the form of night schools. For this and other reasons, there is no upper age limit for admission to a technical school.

Finally, articulation with the system of general schools is also well-defined. Whereas the normal transfer points are at the age of 14 years for full-time technical schools and 15 years (the end of compulsory full-time schooling) for apprenticeship in enterprises with complementary part-time schooling, courses for graduates of general secondary schools (aged 18 years) are also available, which will add professional qualifications to their already acquired right to university
admission.

Graduates of both general and technical schools who have acquired the right to university admission are not subject to any further selection process; they may, however, been required to pass supplementary examinations in one or more of the subjects of Latin, Greek, biology, philosophy and/or descriptive geometry, if these subjects were not part of their school curricula but are prerequisites for the university curriculum of their choice[16]. Graduates of technical schools frequently avail themselves of this opportunity, sometimes to ride out a period of economic recession, sometimes in order to gain professional qualification in a second field , the combination of business and some technological discipline being particularly attractive.

1.5 Obstacles to Major Curricular Change

Owing to a historical situation of mutual distrust between political parties, the Austrian constitution contains a provision whereby any major change in school law - and any amendment to the School Organization Act counts as such - needs a two-thirds majority in the lower house of Parliament. Even so, there have been fourteen such amendments since 1962.

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[15] It is described in skeletal form in the School Organization Act (1962) and in detail in th Ministry's annual publication ABC ds berufsbildenden Schulwesens, Vienna, 1972 ff.)

[16] School Organization Act (1962), seections 41 and 69; Ordinance no. 356, Federal Gazettee 111 (1975)

The School Organization Act entrusts the Federal Minister with the power to establish, in the form of Ordinances to be published in the Federal Gazette, syllabi subject to specific constraints within the Act[17]. As an example, for five-year industrial schools with university access, these constraints are as follows:

> All senior technical schools shall follow upon grade 8[18] and cover five grades (grads 9 through 13). [...]
>
> Senior industrial schools shall ensure that students acquire an advanced technical education, in the industrial [...] secter of the economy. In this context reliable practical skills shall also be acquired by means of workshop or other practical instruction. [...]
>
> The syllabi [...] for the various specializations of the senior industrial schools shall provide for the following compulsory subjects; religious instruction, German, a modern language, history and social science, geography and economics, civics, physical education, the mathematical scientific, theoretical technical, practical economic and professional subjects required with a view to future professional activity, as well as compulsory industrial practice. [...][19]

In many case, therefore, even the addition or removal of a single subject from the syllabus involves the lengthy procedure of enactment of a government bill, including the need for a consensus of the two major political parties in order to assure the required two-thirds majority.

As a partial measure to permit swifter curricular changes, the Federal Minister may issue decrees under which pilot projects not in compliance with the Act may be operated without publication in the Federal Gazette; however, these are limited to a maximum of 5 per cent of all classes in public schools, and the proposed text describing the pilot project must be authorized by the Tripartite School Committee of the school concerned and put on public display there for a period of one month[20].

1.6 Economic Structure; the Social Partners

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[17] School Organization Act (1962), section 6

[18] Grade 1 normally starts at 6 years of age, see the Compulsory Schooling Act, Fderal Gaztte 32 (1985), no. 76, section 2

[19] School Organization Act (1986), sections 66 and 72

[20] Ibid., section 7

The Austrian economy is characterized by a preponderance of small and medium-sized enterprise[21]. This structure cannot fail to be mirrored in the job market, with a lesser share of university graduates and a correspondingly larger one of technicians than in other industrialized countries as a consequence of the somewhat reduced basis for major research.

When, in the ten years after World War II, Austria was occupied by the four Great Powers, it was vitally important to show a united front to the occupiers, particularly in economic matters. The resultant centripetal tendencies led to the establishment of six nationwide economic pressure groups, all but one (the Federation of Trade Unions) characterized by compulsory membership:

Employers' organizations:

a. Federal Economic Chamber
b. Association of Industrialists
c. Conference of Chambers of Agriculture

Employees' Organizations:

d. Federation of Trade Unions
e. Chamber of Labor
f. Chamber of Agricultural Labor

The custom of holding regularly scheduled talks between these associations was continued after the departure of the Allied Troops and has helped to defuse many incipient labor disputes, so that strikes have become very rare in Austria[22]. By and by, these "social partners", as they came to be known, (and particularly the Federal Economic Chamber and the Federation of Trade Unions) have come to deal with nearly all matters affecting the national economy. Without a formal legal basis, but through the massed voting power of their members and the fact that many of their officers also hold key posts in the legislative and executive branches of government they have extended their influence so much that they have been criticized by some as constituting a second government without full democratic accountability.

1.7 The Status of Teachers

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[21] In 1988, 70 per cent of enterprises had fewer than 5 staff, 97 per cent fewer than 50, and 99.9 per cent fewer than 500 (Bundespressedienst, Statistisches Handbuch fur die Republik Osterreich, Vienna 1989, p. 248).

[22] A press release by the Federation of Trade Unions, dated 15 March 1990, quotes an average period of 50 seconds of strikes for each employed person in Austria in 1989.

With few exceptions, teachers at Austrian schools (including private schools) are civil servants. They are hired under contract and after several years obtain tenure, so that they can not thereafter be dismissed except for cause[23].

The teaching load of teachers in technical school varies from 17 class periods (of 50 minutes duration) per week for languages and theoretical technical subjects to 25 periods per week for some types of workshop instruction, with proportional adjustment where a teacher teaches different subjects[24]

Teachers get automatic pay raises every other year[25], but there is no senior grade of classroom teacher to which promotion would be possible. Career opportunities include promotion to a Minister post, an inspectorship or a headship. In part-time schools for apprentices only, there is also a post of second Master[26]. In industrial schools only, there are division heads, who are responsible for all curricula within a given branch of engineering, including the general subjects (e.g. one for mechanical engineering, one for civil engineering, etc.)[27]. There are, however, no department heads for individual subjects, except for practical work in the kitchen and in the textile workshop[28].

Part-time second jobs by teachers are not only permitted but encouraged, since continued contact with the world of work constitutes an excellent form of updating of their knowledge and skills. Such jobs may even be available at the schools themselves, as some have attached government testing centers for materials, automobiles etc.[29].

1.8 Terminological Note

While the terms technical and vocational are often poorly differentiated in the literature, in the terminology of major international organizations (UNESCO, Council of Europe, OECD), technical schools are understood to be career-oriented schools granting university access to their graduates, while no such access granted to the graduates of vocational schools.

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[23] For details see the Federal Contractual Emplyees Act, Federal Gazette 20 (1948), no.86, and the Civil Service Act, Federal Gazette 113(1979), no.333.

[24] For details see the FederalTeaching Load Act, Federal Gazette 66 (1965), no.244. The teaching load associated with each subject in a given curriculum is also contained in coded form in the Scheduling Table of every syllabus.

[25] Salaries Act, Federal Gazette 15 (1956), no. 54, section 8.

[26] School Organization Act (1962), section 50.

[27] Ibid., section56 and 70.

[28] School Intruction Act (1986), section 55.

[29] Technical Testing Act, State Gazette 77 (1910), no. 185; School Instrction Act (1986), sections 58 and 72.

For the purposes of this paper, there is little need to distinguish between technical and vocational schools. Therefore the term technical should be understood to include vocational.

2. The Life Cycle of a Syllabus

2.1 Initial Impetus

Pressure for a new curriculum or for the change of an existing syllabus usually comes from one of the following sources:

a. the Federal Minister or another member of the legislative or executive branch of the government. This will typically be the case when a matter of social policy is involved, such as a new upgrading curriculum that will open university access to a specific group, or the need to reduce weekly class hours in line with working hours;
b. one or more of the social partners. This, a fairly common case, occurs when companies or union members report that certain aptitudes currently required are not yet or no longer taught adequately in technical schools, or that traditionally taught aptitudes are no longer needed;
c. local politicians, who see a need in their constituencies for a school, that offers a unique curriculum;
d. heads and staff of technical schools who see a market niche for a new curriculum, or who observe problems in the implementation of an existing syllabus;
e. Ministry officials who foresee impending changes, for instance after the eventual admission of Austria into the European Economic Community, or who wish for greater uniformity of syllabi in the interest of students' educational and professional mobility, as well as ease of administration.

It is comparatively rare for suggestions concerning technical curricula to come from students, parents, the press or the public at large, probably because of the specialized knowledge required.

Wherever the original impetus comes from, the suggestion is passed, direct or through channels, to the federal Minister, who then provides guidelines for the head of the competent Ministry department and puts him in change of the development project, There are five such departments under the Director of Technical Education:

a. industrial full-time and night schools;
b. commercial dull-time and night schools;
c. service-trades full-term and night schools (e.g. catering, social work);
d. agricultural full-time schools (including forestry; there are no night schools);

e. part-time schools for apprentices.

Instructions from the Minister also include a deadline for the coming into force of the new syllabus. While the desire for a high-quality product argues for ample deadlines, political necessities often make them rather tight. The balance ultimately struck between quality and speed has by and large been considered acceptable by the end users.

2.2 The Scheduling Table

Of all the parts of a syllabus, the Scheduling Table is usually broached first. Containing nearly all curricular provisions which have financial consequences, it is the most controversial section, so that it would make little sense to proceed with other sections before agreement on the Scheduling Table is reached. The pertinent negotiations normally see the Treasury and the Technical Teachers' Union pitted against each other, and a compromise is usually reached with the help of disinterested experts. Here , as well as in the non-controversial sections of the Scheduling Table, school inspectors for the type of technical school in question play a major role.

Of course the total number of class periods affects the cost of the curriculum - and the burden on the students - most of all, but the sharing-out of classroom time among the various subjects is also the cause for many a fight, which must be resolved by the Ministry. Where a subject is not mentioned by name in the School Organization Act, its very inclusion in the curriculum may be controversial at this stage. Fortunately instances of precedent may be invoked in many cases.

Arbitration is also sometimes called for concerning the distribution of class hours in a subject over the years of the curriculum. Where this is not determined by the students' age or by prerequisites, teachers would often prefer their lessons to come as late as possible in the curriculum, so that they may expect greater student understanding and possibly greater professional prestige.

Another issue is the amount of practical work apportioned to certain subjects. While the maximum number of students in the classroom is normally 30[30], in laboratories and workshops one teacher may have to be provided for as few as 11 or 4 students respectively[31]. This explains footnotes such as "With practical work" in the Scheduling Table. In such cases the proportion of practical work of a subject is relegated to the Guidelines section of the syllabus in order to avoid visual overload of the Scheduling Table.

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[30] School Organization Act (1962), sections 51, 57 and 71

[31] Ordinance no. 86 Federal Gazette 34 (1981), section 6, as amended in later years

The final bone of contention is the assignment of a teaching load to each subject. This is encoded in the form of teaching-load groups ranging from I (lowest) to VI (highest) and parenthesized if it has previously been established by law.

As an example, the scheduling Table of the current syllabus for senior schools of electrical power engineering is reproduced below[32].

24 Compulsory Industrial Practice: at least four weeks each before starting year 3 and year 5.

Group	Weekly class periods					Teaching load
	Year					Load
Optional subject	1	2	3	4	5	
Shorthand and typing	2	2	-	-	-	(V)
second modern language(4)	-	-	3	3	3	(I)
Management	-	-	-	-	2	III
Topical subjects (...)	-	-	2	2	2	I to VI
Optional exercises						
Physical education up to)	2	2	2	3	3	(IVa)
Remedial courses						(I)
German			3			(I)
Modern language (English)			3			(I)
Mathematics and applied mathematics			3			

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[32] Ordinance no. 412, Federal Gazette 170 (1986), pp. 2407 f.

	Compulsory subjects	Weekly class periods Year					Total	Teaching load group
		1	2	3	4	5		
1	Religious instruction	2	2	2	2	2	10	(III)
2	German	3	2	2	2	2	11	(I)
3	Modern language (English)	2	2	2	2	2	10	(I)
4	History and social science	-	-	-	2	2	4	(III)
5	Geography and economics	2	2	-	-	-	4	III
6	Business, law and civics	-	-	-	2	2	4	III
7	Physical education	2	2	2	1	1	8	(IVa)
8	Mathematics and applied mathematics	5	3	4	3	-	15	(I)
9	Descriptive geometry	2	2	-	-	-	4	(I)
10	Physics and applied physics	2	2	2	1	-	7	(II)
11	Chemistry, applied chemistry and environment	2	2	-	-	-	4	II
12	Computer science and applied computer science	-	2	2	-	-	4	I
13	Fundamentals of mechanical engineering (1)	5	3	2	-	-	10	I
14	Mechanical engineering	-	-	-	2	-	2	(I)
15	Fundamentals of electrical engineering	4	3	-	-	-	7	(I)
16	Measurement and control	-	2	2	3	3	10	I
17	Electrical Machinery and converters	-	2	2	3	4	11	I
18	Electrical plant	-	-	2	4	4	10	I
19	Electronics and microelectronics (2)	-	-	2	2	6	10	I
20	Design practice	-	-	2	4	4	10	I
21	Laboratory	-	-	3	4	5	12	I
22	Workshop laboratory	-	-	-	3	3	6	III
23	Workshop	9	9	9	-	-	2	(Va)
	Total number of weekly class periods	40	40	40	40	40	200	

24 Compulsory industrial practice: at least four weeks each before starting year 3 and year 5.

i. With design practice.
ii. With practical work.
iii. In years 1 through 4, if required, 1 or 2 courses of up to 8 class periods each, within the shortest possible period (up to 3 class periods per week).
iv. Not the language taught in the compulsory subject "Modern Language" [This note is redundant]

A glance at the Scheduling Table frequently shows instances where several related subjects could and should be combined, both for overall clarity and for a reduced proportion of examination time during the school year. This seems particularly convenient where only one class period per week is allotted for each subject and the teaching load group is the same. As the Scheduling Table is reproduced in leaving diplomas[33], mainly for the information of employers, it is often desired to retain all the elements of such a subject merger in the name of the combined subject. But this would result in unwieldy subject names, and the solution often lies in a short name (for use in administration) with a footnote (for certificates and diplomas only).

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[33] Ordinance no. 415, Federal Gazette 168 (1989), sections 5 and 6.

Once a rough compromise has been reached concerning the Scheduling Table, it is time to tackle the next phase.

2.3 The Syllabus Team

The job of producing the syllabus of individual subjects is entrusted by the Ministry to a team of experts from the schools. Not only would it be impossible to find the required expertise for all subjects in all technical curricula within the Ministry; it is also convenient to involve those who will have to put the syllabus into practice.

Members of the team are normally selected from among the inspectors, heads of schools, of divisions and departments, as well as among teachers of subjects in which none of the other members are qualified. Care is usually taken to ensure a good geographical spread and to have the views of major political parties represented. Typical team sizes range from 5 to 30, depending on the complexity of the job, with larger teams normally splitting into sub-teams.

The team typically meets in intervals of one to two months, with a deadline of several months for submission of the draft syllabus.

The terms of reference of the syllabus team include

a the rationale for the new or amended curriculum;
b the Scheduling Table;
c any matters already settled by precedent (e.g. the general subjects in a new industrial syllabus will not normally differ from those of related fields);
d the need for relevance and attainability of objectives;
e instructions concerning the formal structure and wording of the text, such as precision, clarity and brevity.

The Objectives section of a subject syllabus sets forth in fairly general terms the knowledge, skills and attitudes expected of a student after he has completed the full course. Syllabus teams need to be reminded that this section is not intended as a collection of high-flown generalities but as the place where, through the choice of appropriate verbs, the "depth of processing" in students' minds is specified. It is this section that determines which parts of the subject matter are to be merely known theoretically (by rote or with deeper understanding), which skills must be mechanized and which items mastered to the extent that new types of problems can be solved.

The Subject Matter section must by law indicate which items are to be taught in which year of the curriculum. It is set forth in the form of a hierarchic structure of two to three levels: chapters (first line of each paragraph, followed by a colon), topics, (items within a paragraph, separated by periods, semicolons or commas) and in some cases subtopics (parenthesized items). Subtopics are only used to indicate that not all aspects of a topic are to be treated, or to avoid ambiguity if the subdivision of a topic is controversial.

The guidelines section contains comments on

a. criteria for selecting sub-items within the topics and subtopics specified in Subject Matter section

b. recommendations concerning teaching methods, teaching aids, school trips etc., which are particular to both the curriculum and the subject concerned;

c. the number of hour examinations, if any, in each school year[34].

d. the proportion of time allotted to theoretical and to practical instruction in "mixed" subjects.

It should be noted that the subsection on methods is by force of custom considered as advisory rather than compulsory. This is reflected in its wording, which avoids the use of the prescriptive *shall* and gives brief reasons for recommendations[35].

As an example, the parts of the Electrical Power Engineering syllabus relating to the subject "Electronics and microelectronics" are given below. By the time this subject starts, certain prerequisites have already been supplied in the subjects "Computer science and applied computer science", "Physics and applied physics" and "Fundamentals of electrical engineering".

19. Electronics and Microelectronics

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[34] This regulation is contained in the Assessment of Achievement Ordinance (1974),section 7. it constitutes the only reference to student assessment in the syllabi. because ofthe large number of subjects. hour examinations are normally restricted to languages, mathematics and one or two technical subjets.

[35] The provision of the Article 20 ofthe Federal Constitutional Act (1920) whereby civil serants shall be bound by the instructions of their superiors takes precedence over section 17 of the school Instruction Act (1986), which lays down the principle of teachers' self-reliance and responsibility: it is, however, not normally enforced in matters of classroom method.

Special Educational Objectives:

The student should know in depth and be able to apply both the laws of electronics and those electronic components and circuits which are frequently used in electrical power engineering.

Subject Matter:

Year 3 (2 class periods weekly):

Electronic components:
Passive and active components (design, principle of operation, characteristic curves). Cooling. Application (diode, transistor and semiconductor-controlled rectifier as switches; rectifier circuits with diodes). Protection of semiconductor components against over voltage and overload.
Opto-electronics:
Display units; electro-optical transmission lines.

Year 4 (2 class periods weekly);

Circuits with passive components:
Frequency response of dipoles and quadrupoles. Transformers, RC fitters and lines.

Circuits with active components:
Single-stage and multi-stage amplifiers, amplifiers with feedback, differential amplifiers, operational amplifiers, active fitters.

Year 5 (6 class periods weekly):

Digital technology:
Microelectronics (design, bus system, standardized interfaces, memory components). digital fitters (theory, realizations). Scanning circuits.

Microcomputers:
Instruction set, assembler programs.

Microcomputer systems:
Software development, software application, interfaces.

Information processing:
Channel capacity, coding of messages, interference-proofing. Common data transmission systems.

Guidelines:

The chief criterion for subject matter selection is applicability in electrical engineering practice. This is why particular care will have to be taken to adapt the contents to the current state of technology.

Charts, graphs and company publications increase the perceptual clarity of teaching.

The average extent of the programming exercises accompanying the teaching of theoretical knowledge is 2 class periods per week in year 5, in this context clustering[36] is recommended because of the scope of the exercises.

2.4 The Coordination Phase

Sometimes the subject-independent sections of the syllabus, viz. the general aim and the general guidelines, are also entrusted to the syllabus team. More often, however, their working is performed in the next phase of development by an ad-hoc committee of two Ministry officials, whose task is ensuring the formal and material compatibility of the new syllabus with the system as a whole. One of the committee members comes form the department administering the type of school in question, whereas the other is from the coordinating department of the Technical Education division.

The reason why officials rather than teachers work on the general sections is that these are of a more abstract nature than the formally similar subject-bound objectives and guidelines, thus lending themselves more to modeling after other syllabi outside the experience of the syllabus team. The first paragraph of the general aim is a reference to the relevant sections of the School Organization Act, thus firmly establishing the justification of the syllabus ordinance on the basis of an Act of Parliament. Here is an example of

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[36] I.e. scheuling the exercisies only in some weeks but at increased freuency.

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these sections from the syllabus currently in force for all senior industrial schools[37].

Here is an example of these sections from the Syllabus currently in force for all senior industrial schools[37]

I. General Aim

The senior technical schools shall serve, as set forth in sections 65 and 72 and considering section 2 of the School Organization Act, toward the acquisition of an upper-secondary-level education in their respective fields, while simultaneously enabling the students to enter a university.

The graduate of a senior technical school should be in secure command of the knowledge and skills required for the performance of engineering jobs in the field concerned according to the state of technology. He[38] should also acquire knowledge and skills qualifying him for university studies. He should know and observe those requirements of professional practice which are laid down by law or standards, and he should be able to operate the machines and devices used in professional practice.

In the application of scientific knowledge to the solution of technical problems, the graduate should be able to correctly assess the interaction of man and the environment, he should be able to contribute through his work to the preservation of living space.

He should be able to precisely observe processes and states according to predetermined criteria, to recognize essentials, and to express facts in spoken and written German and in at least one foreign language, in the symbolism of mathematics and science and by means of graphs.

The graduate should be able and willing to participate in public affairs and in the cultural life of Austria, he should know and endorse the democratic principles as well as the nature of the people of his neighborhood and his country as well as of his profession. He should strive for objectivity and meet the positions taken by others with respect and tolerance. He should be able and willing to cooperate in the solution of problems. He should respect the work of others. He should be willing to undergo further training for himself and also plan and promote the further training of others.

The graduate should accept and pursue new matters with interest, he should approach a job with self-confidence and feel pleasure in his own work and achievements. He should find relaxation in cultural activities. He should promote his physical and mental health and his capacity for work through healthy physical activity and posture as well as through activity in sports and games.

II. General Guidelines

In order to achieve the general aim it is necessary to start from the student's previous knowledge and to select subject matter by the criteria of practical applicability and of typicality with respect to the field concerned. Pride of place shall be given to thorough work within the necessary limitations over any superficial variety.

In order to achieve the ability of verbal communication as specified in the general aim, oral presentations of increasing difficulty shall also be assigned in the theoretical technical subjects.

Permitting the student to apply his knowledge in different contexts requires problem-oriented processing of the subject matter, which clarifies linkages (also with other subjects), takes the student and his age into account and uses suitable teaching and comprehension aids, produced by the teacher himself if required. To comply with the practice-oriented aim, the use of such aids as are in current professional use if of greatest importance. The incorporation and application of technical and scientific progress as specified in the general aim requires the teacher to permanently observe and adopt the developments concerning his field and its environment and to adapt the subject matter and the teaching methods to the current state. The syllabus section "subject matter" can therefore only have the status of a guiding framework, where ecological aspects shall also be duly taken into account.

Attaining the aim requires talks among all teachers of related subjects, permitting students to be prepared in due time with the required amount of prerequisite knowledge and avoiding duplication of effort. In this context subject schedules are necessary[39].

Project work by groups proves a particularly useful preparation for the professional situation, which also involves communicative ability. The criticism of fellow students with respect to problem-solving, as well as self-assessment, are important for the progress of learning.

Excursions and field trips promote insights into professional technical and business or administration-oriented contexts as well as into social relationships, they also promote an understanding of personal situations in the world of work.

Several aspects of a given subject may be taught by different teachers in keeping with their previous training and their professional knowledge[40].

By way of "concentrated instruction" for pedagogical or organizational reasons, several mutually complementary compulsory subjects may be offered in the form of integrated instruction.

Similarly the number of class periods specified in the Scheduling Table may be achieved in part or in total by "clustering", whereby one weekly class period is equivalent to approximately forty class periods per school year.

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[37] Ordinance no. 412, Federal Gazette 170 (1986), pp.2392 f.

[38] In legal parlance, the masculing pronoun stands for females as well as males.

[39] While the "subject mater' section assigns each item to a year of the curriculum, the relative order of items within a year is basically left to the teacher. The aabove text reminds teachers that this freedom is constrained by the necessity to supply knowledge for further use in other subjects at certain times within the year.

[40] This must not be construed as a license for team-teaching. The teachers would be in the classroom at different times.

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Here is a checklist of instances where the syllabus team's draft may need revision by the committee of two. It is far from exhaustive, as it excludes numerous style sheet items which are to ensure freedom from logical and linguistic flaws as well as internal and external consistency.

a Has the syllabus team stayed within its terms of reference? In particular, has no change been made that would affect the Scheduling Table? (Occasionally suggestions about a redistribution of a subject's class periods over the years are made and accepted at this stage).
b Are the objective and the amount of subject matter in keeping with the number of class periods? This must be seen in relation to other syllabi. In particular, two syllabi (or sections relating to a given year) must not be identical in wording if their allotment of class periods is different, nor may one be a subset of the other if the allotment of class periods is the same.
c Has no subject matter been included that is a prerequisite from earlier schools? Conversely, has all subject matter of a given subject been included that is a prerequisite for other subjects?
d Has the pathetic fallacy been avoided? (Function of the digestive system" is preferable to "Purpose of the digestive system".)
e Is the structure of the subject matte clear even to the lay reader?
f Is the language clear and concise?

Again this work is normally done against a close deadline. It is thus not surprising that even the second draft of the syllabus, as produced by the committee of two, should be flawed by some errors, oversights and inconsistencies. These may well find their way into the final version, since most of the persons to whom the draft is subsequently submitted may lack the expertise to spot them or be subject to time pressures of their own. A more than superficial glance at the sections quoted above will not fail to identify several examples.

2.5 The Comments Phase

The draft now goes to the Director of Technical Education, a civil servant directly responsible to the Minister. He may make any changes he sees fit; in practice this affects less than one per cent of the total wording.

The next phase is within the competency of the Ministry's legal division, where an official checks the text for compatibility with the Constitution, with the School Organization Act from which it draws its justification, and with other Acts of Parliament[41]. Any inconsistencies found are corrected, if necessary after consultation with the head of the technical department concerned.

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[41] Failure to ensure such compatibility would be a reason for the Constitutional Court to declare the syllabus invalid (Federal Constitutional Act, (1920), Article 139).

A generous number of copies of the draft must now be prepared, because the draft can not come into force until it has been submitted to the nine Provincial School Boards for comment[42]. On a voluntary basis, however, the draft is simultaneously sent to all other Ministries[43], as well as to the social partners and to every other lobby with a conceivable interest in education, from religious bodies through the Chamber of Patent Lawyers to the Boy Scouts and Girl Scouts. This is done on the principle that everybody should be heard and that anybody may make a useful contribution. Thus the number of copies sent out may well go into three digits.

The line is drawn at asking individual teachers for comment, because the sheer mass of answers would not be manageable within a reasonable time. Any of the organizations contacted may, however, pass the draft to its sub-bodies or to individual members, so that individual teachers may be asked their opinion either by their Provincial School Board[44] or by their union. Regrettably, this is seldom the case; the deadline set by the Ministry (typically two months) may be a reason.

The draft is accompanied by explanatory notes and a forecast of the budgetary consequences of the proposed syllabus.

The religious bodies are not only asked for comments but also for provision of the text of the syllabus in religious instruction, which by law is their sole responsibility[45]. While they may greatly differ in structure from the remainder of the syllabus, they will be incorporated in the published version[46].

If the syllabus is for a pilot project, only the school or schools concerned are asked for comment.

The replies are sent to the head of the competent technical department, who will tabulate them by authors and by the passages they refer to, so that it will be easy to see where different lobbies have similar or indeed opposing suggestions. It is also his duty to prepare a final draft, incorporating those proposed changes which he supports. If there is any controversy about legal matters, the legal department may be called in again for advice.

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[42] School Organization Act (1962), section 6.

[43] In particular, objections may come from the Treasury for budgetary reasons, from the Ministry of Science and Research concerning university admission, and from the Ministry of Economic Affairs concerning the graduates' professional privileges.

[44] For historical reasons, two dozen schools, nearly all of them technical, are exempt from control by the Provincial School Boards, being under direct control of the Ministry as per section 3 of the Federal School Supervision Act (1962). Each of these schools, if affected by the draft, also receives a copy.

[45] Religious Instruction Act, Federal Gazette 39 (1949), no. 190, as amended in the Federal Gazette 61 (1962), no. 243, section 2. Every student may, at the start of the school year, choose to attend or not to attend religious instruction in his creed.

[46] Generally this takes the form of eference to separately published syllabi for religious instruction, as these apply to a broad group of school types or even to all types.

In this finalized form, the draft once again goes to the Director of Technical Education and then to the Minister, who may accept or reject the proposals concerning the external comments. He may of course make any other changes, since his is the ultimate political responsibility[47]; but this is not likely to happen, as his guidelines were made known in the early phases of development.

With the Minister's signature, the syllabus at last leaves the draft stage.

2.6 Publication

If the syllabus is not of the pilot-project type, it has the status of an Ordinance and is sent - via the Ministry's legal department - to the Editor of the Federal Gazette for publication at his earliest convenience. The necessity of careful proofreading may cause further delays at this stage.

The text includes provisions about the date the Ordinance will come into force, which must be after the date of the Minister's signature. If publication by that date can not be guaranteed, a sufficient number of copies must be sent in advance to the schools concerned.

Sometimes curricular amendments may cause problems for students who, because of underachievement, have to repeat a grade[48], thus becoming subject to the new syllabus in midstream. Such students might never be taught certain subject matter, which was shifted from a later to an earlier year. Theoretically a syllabus should include transitional regulations for such cases, but this is usually precluded by the mass of detail involved, particularly since only a very few students - even unforeseeably none at all - would be affected. Instead, an informal solution is arrived at through goodwill within the school.

If the syllabus is for a pilot project, its status is that of a Ministerial Decree. It is not published but merely sent to the schools and to the Provincial School Board concerned. Normally each school must submit to the Ministry an annual report about positive and negative experiences with the experimental curriculum.

But even non-experimental curricula do not last forever. The forces that necessitate amendments are active from the first day, and thus the cycle will repeat, typically within a decade.

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[47] Federal Constitutional Act (1920), Article 19.

[48] School Instruction Act (1986), sections 25 and 27. There is no "social promotion".

3. The Bank of Objectives for Technical Education

3.1 Project History

In 1971, at the height of international interest in formal curriculum development, the Austrian Education Ministry[49] started a type of curriculum development intended to complement and improve the bureaucratic system outlined above. The project comprised the elaboration, printing and distribution of catalogs of cognitive educational objectives, including solved sample test items, for selected subjects of technical curricula. The development work was to be done by project groups comprising two to six teachers plus a university tutor. Each subject publication would consist of as many volumes as there were years in the subject syllabus and be distributed free of charge to all teachers of the subject. A project group would have a year for the preparation of each volume; it would meet for weekly workshops, in which individual research and development work would be discussed. Members had to be active teachers and were paid an extra 50 per cent of their basic salaries for their work within the project. The tutor's job was to supply the group members with the necessary knowledge and skills in structuring the subject matter, in constructing objectives and samples[50] and in group dynamics; he might or might not be an expert in the subject to be treated.

All objectives were to comply with the following requirements:

a they were to be precise in wording and illustrated by at least one test item each;
b they were to be justifiable from the general aim of the technical curriculum concerned[51];
c they were to be achievable under the external conditions affecting Austrian technical education (number of classroom periods allotted, students' previous knowledge, teacher-student ratio, teacher training, available equipment etc.).

The original purpose of the project was merely to produce a more detailed version of the current curricula as an aid to teachers, particularly in the early stages of their careers, and to textbook authors. It was clear from the start that no attempt should be made to make the objectives compulsory as either a substitute for or a complement of the syllabi, nor to show preferences regarding teaching methods. Evaluation would come from the teachers using the publications, but also from universities and from the social partners[52].

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[49] The proponents were Karl Koweindl, then head of the co-ordinating department for technical education, and Peter Posch, then Assistant Professor of Education in the Vienna School of Economics.

[50] Much of this was based on English-language publications, such as Robert F. Mager (1961), Preparing Objectives for Programmed Instruction,, Fearon (San Francisco), and Benjamin S.Bloom, ed. (1956), Taxonomy of Educational Objectives: Handbook 1: Cognitive Domain, McKay (New York).

[51] The aim of the curricula of general schools is not easy to define in terms specific enough to permit such justification. This may be an important reason why no similar project has been attempted for Austrian general schools.

The project began with three groups and, after reaching a maximum of ten, stabilized at six groups working concurrently. By and by it became clear that only groups of three to five members could work efficiently and that, in the interest of the quality of the finished product, groups would need an extra year for producing the following preparatory work:

a a hierarchical (tree-type) structure of the subject matter of their discipline;
b a network-type structure showing where objectives depended on other objectives as prerequisites;
c a linear pedagogical structure recommending one of the possible groupings of the objectives into manageable topics and subtopics, as well as one of the many possible time sequences.

It also turned out that in some subjects the syllabi contained different Scheduling Tables in the several technical curricula that were to be covered, so that in these subjects each volume had to contain a certain group of topics rather than the subject matter for exactly one year.

As the principles of curriculum development of the sixties slowly went out of fashion , it proved more and more difficult to recruit university tutors for the project groups. Experiments with teachers who had proved particularly skillful in previous project groups were highly successful, so that in the later stages of the project all tutors were recruited in this fashion.

The project is scheduled to end in 1994; at present four working groups are preparing final volumes for mechanics, French, history and history of art.

In its original aims, the project has seen considerable success. There were, however, some unresolved problems. e.g.:

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[52] The early stages of the project are described in detail in Karl Koweindl, "Zur Entstehung des osterreictischen Lehrzielbankprojektes Mathematik bzw. Mathematik und angewandte Mathematik fur berufsbildende hohere schulen"; Peter Posch, "Die Lehrzielbank Mathematik fur berufsbildende hohere Schulen", Julius Scharf, "Lehrzielbank 'Mathematik und angewandte Mathematik' fur die Hoheren technischen Lehranstalten"; Helmut Aigner, "Die Lehrzielbank in der Hand des Lehrers", all in Die berufsbildende Schule Osterreichs VII, 1 (1973), pp. 1 - 18; and in Helmut Aigner, "Erste Evaluation der Lehrzielbank Mathematik" in Die berufsbildende Schule Osterreichs VII, 2(1974), pp. 24 - 31.

a There was no question of ever dealing with all subjects, as this would require several thousand project groups. Subjects for inclusion in the project have been mainly selected by the number of students affected. However, many engineering subjects had to be excluded as, owing to permanent staff shortages, all eligible teachers carry an overtime teaching load that excludes their taking on further work.

b Given the number of subjects not covered, as well as budgetary limitations, it proved difficult to obtain permission to recall project groups for the purpose of updating their work.

c Because of the need for weekly workshops, teachers based at distances exceeding 250 kilometers from Vienna could not participate actively.

d Budgetary limitations made it impossible to continue the massive evaluation conducted in the project's early years and to maintain the number of further teacher training courses dealing with practical use of the publications.

At the time of this writing (1993), the following subjects had been or were being covered within the Bank of Objectives project (superseded versions are now out of print):

a Accounting (five volumes);
b Attitudinal and emotional objectives (one volume);
c Bricklaying and carpentry (four volumes);
d Building site management (three volumes);
e Chemistry, applied chemistry and environmental science (three volumes);
f Cognitive key qualifications (one volume);
g Commercial arithmetic (two successive versions, altogether six volumes);
h Computer science (one version for commercial schools, two successive versions for industrial schools, altogether five volumes);
i Descriptive geometry (one volume);
j English (three versions for different types of schools, then an integrated version, altogether nine volumes);
k French (three volumes so far, two more to be published);
l General management (two volumes);
m Geography and economics (two successive versions, altogether four volumes);
n German (five volumes);
o History and social science (three volumes so far, one more to be published);
p History of art (two volumes so far, one more to be published);
q Machine shop (two successive versions, altogether seven volumes);

r Mathematics and applied mathematics (three versions for different types of schools, followed by an integrated version, altogether seventeen volumes);
s Mathematics (one volume so far, one more to be published);
t Nutrition (two volumes);
u Personnel management (one volume);
v Physical education (four volumes);
w Physics and applied physics (four volumes);
x Shorthand and typing (three successive versions, seven volumes);
y Technical Drawing (one volume);

3.2 A Sample Objective

The following example[53] is the translation of a page from the Bank of Objectives series of publications dealing with computer science.

Topic 7
Files
Subtopic 73
Random-access data files

OBJECTIVE

To perform memory requirement computations for random-access data files

Behavioral category	II[54]
Prerequisite objectives	7130, 7150[55]
Dependent objectives	7310, 8140[56]

Examples

A random-access data file has the following fixed record structure:

Last name	15 bytes
First name	10 bytes
Address	40 bytes
Telephone	15 bytes

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[53] Lehrzielbank fur das berufsbildende Schulwesen: Elektronische Datenverabeitung fur Hohere technische Lehranstalten und fur Hohere land-und forstwirtschaftliche Lehranstalten. Zweite Experimentalfassung Teil 1B, Vienna (1988), page code 7310.

[54] In this series, behavioral categories are defined as I (knowledge by rote), Ia (knowledge with understanding), II (mechanized skill) and IIa (intelligent skill)

[55] These are "To describe components of data files" and "To describe forms of organization and of access of data files" and have in their turn further prerequisite objectives

[56] This is "To open an dinstall, with the aid of a manual, a random-access data fuke" and has in its turn further dependent objectives.

a. How much memory (in KB) will this data file require if data of 2000 persons is to be stored?

b. How many of these records are the maximum storable on a floppy disk of 360 KB capacity?

c. What is the maximum permissible length of a record if the data of 1200 persons is be stored on a floppy disk of 360 KB capacity?

Solutions

a. 160 KB
b. 4500 KB
c. 300 bytes

Some other objectives contain considerably more text, as well as lists, tables, graphs, drawings and/or photographs.

3.3 Feedback to Syllabi

It was soon seen that the project teams of the Bank of Objectives project were able to deal in far greater depth and under less pressure of time with curricular matters than the traditional syllabus teams. As a rule, their organization of the subject matter into topics and subtopics was superior, indeed they frequently found inconsistencies and problems of justification in the existing syllabi which they were to expand on. It was therefore reasonable for the project to rid itself of its absolute dependence on published syllabi[57]. The publications began to be no longer mere descriptions of the status quo but made closely reasoned suggestions about subject matter to be added, modified or removed.

Thus the project, in addition to its original aims, acquired another purpose: curricular improvement. While some teachers started to complain that accepting the recommendations of the Bank of Objectives would mean a departure from the official syllabi and thus a breach of the law, others joined the authors in lobbying for changes they found reasonable and also enlisted the cooperation of inspectors who sometimes found ways to reconcile the two curricular sources.

Ultimately, of course, the findings of the project groups were meant to influence the syllabus terms in the elaboration of future syllabus amendments. This has certainly been the case, though not invariably so: for one thing, an influence could only be exerted if Bank of Objectives publications were already available for a subject; ideally, the series should have been completed by the time of the syllabus group's first meeting. There were also some "Not invented here" reactions, as well as occasional failures to understand why in choosing a certain wording a project group had implicitly rejected another - something that could not be put in print except in the most important cases. By and large, however, the influence of the Bank of Objectives on Austrian technical syllabi has been considerable in recent years and is still growing, particularly since there is a frequent overlap between the membership of a project group and of the corresponding syllabus team.

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[57] A constraint that has remained is the total number of class periods awarded to each subject by the Scheduling Table: as no subject can reasonably expect an increased allotment in the foreseeable future, anything based on such expectations would not be applicable in classroom practice.

There has also been considerable influence of the Bank of Objectives on the "secret syllabus", i.e.. textbooks; not only because some project group members were textbook authors to begin with or became interested in textbook writing through their development work, but also because competing authors could not afford any longer to forgo the inclusion of objectives or of the improved structuring of disciplines.

Thus, while numerous legal and extra-legal factors contribute to the near-impossibility of speeding up, or rendering more flexible, the processes of technical curriculum-making in Austria, these processes have been fairly optimized within their limitations. Like the ideal lesson, the ideal curriculum is not likely to be ever achieved; but if so, it should not be for want of trying.

TECHNICAL AND VOCATIONAL EDUCATION IN AUSTRALIA

Australian Country Paper

1. Introduction

Australia views vocational education and training as the essential key to developing a productive adaptable and highly skilled workforce. In the climate of today's increasingly competitive international environment such a workforce is seen as vital to increase economic growth and improve the quality and standard of Australian life.

The purpose of this paper is to examine the role of Australia's vocational education and training(VET) system by initially outlining the context in which it operates and then examining its significance in socio-economic development, the role of industry, the management of the system and the future direction of vocational education and training.

2. An Overview of Australia's Education and Training System

2.1 The Federal System of Government

Australia is a Federation in which governmental power is shared between the Federal or Commonwealth government and six State and two Territory governments, (all future reference to States will include Territories). The Constitutional responsibility for education and training rests with individual States and Territories although a significant Commonwealth role has developed in several sectors of education and training, aligned with the Commonwealth's overall responsibility for Australia's economic development.

2.2 The Education Sectors

The Australian Government sees education as playing a fundamental role in how well Australia positions itself in the twenty-first century.

There are three broad education sectors in Australia: the school sector, the VET sector and the higher education sector. Attached is an outline of the structure and linkages of Australia's education system.

2.2.1 Schools

Australia has two sectors of schooling: a government and a non-government sector. Two-thirds of young people are educated in

government or public schools administered by State and Territory governments, a further quarter are educated in Catholic schools and the remaining twelfth are educated in non-government independent schools.

While State and Territory governments have constitutional responsibility for primary and secondary schooling, the Federal Government plays an important national role in promoting national consistency and coherence across the Australian education system.

Primary Schools emphasize the development of basic English language and literacy skills, numeracy and simple arithmetic, social education, health and creative activities.

Secondary Education is more specialized. In the senior years a wider range of subjects are on offer and the trend is towards schools developing school-based courses to suit the needs of their own students. Several states and territories have established separate year 11 and 12 schools, often called 'senior colleges' which can usually offer a wider range of options to their students than conventional high schools. In addition, in some States Technical and Further Education colleges provide full and part-time courses for students seeking to obtain a year 12 certificate.

2.2.2. Vocational Education and Training

Most vocational education and training in Australia is provided by the government funded Technical and Further Education(TAFE) system. The TAFE sector consists of a nationally recognized system of vocational education and training. There is also a growing number of private sector training providers offering accredited training to the public. In addition, less formal adult and community education providers have a role in the VET system and much training occurs on-the -job both in informal and in structured setttings.

2.2.3. Higher Education

The Higher Education System covers universities offering diplomas, degrees and higher qualifications in a range of academic, professional and vocational fields.

2.3. Vocational Education and Training Provision in Australia

2.3.1 TAFE Institutions

The TAFE system is the major public provider of vocational education and training in Australia. The main constitutional responsibility for vocational education and training, including TAFE, resides with the six State and two Territory governments.

There are 287 major TAFE institutions, including 135 in non-metropolitan areas. TAFE institutions provide a full range of training encompassing preparatory, operator, trade, post-trade, technician(or para professional) and, in some fields, professional levels.

Each year, over 8 per cent of the Australian population of working age undertakes some form of training in TAFE institutions. In 1991, there were some one million students enrolled in preparatory and vocational courses in TAFE.

TAFE institutions are the major providers of the off-the-job component of entry-level training under Australia's system of apprenticeships and traineeships. In 1991/92 there were over 142,000 apprentices and trainees in training in the TAFE system.

The regulation of the VET sector is primarily a State responsibility. However, in August 1992 all governments agreed to a National Framework for the Recognition of Training. The framework provides for the national recognition of accredited courses, training programs, registered training providers(public and private sector) and credentials.

To varying extent around the country, TAFE institutions also provide customised training services to private firms on a commercial basis. A number of institutions have also developed joint ventures with private firms.

2.3.2. Private Training Provision

A range of private providers operate in Australia, including business colleges, computer training firms, and the like. Increasingly, these providers are offering formally accredited training.

The Federal Government has recently fostered an open and competitive training market to meet the increasing demand for structured training provision. The supply of quality training is expanding due to the efforts by both governments and providers to establish accreditation and professional standards.

Peak bodies such as the Australian Council for Private Education and Training (ACPET) have established formal mechanisms which foster and monitor business and managerial practices which seek to ensure ethical and professional standards of practice for its members and other private vocational education and training providers.

2.3.3. Adult and Community Education Provision(ACE)

As well as the system of TAFE institutions, Australia also has a large variety of less formal adult and community education (ACE) providers. These include publicly funded, community based and private sector providers.

Traditionally, ACE has been regarded as primarily concerned with recreation/leisure or personal enrichment activities. However, there is an increasing recognition that ACE includes significant provision of explicitly vocationally-oriented training. For example, under labour market programs for the unemployed, such as SkillShare which has been introduced for people who are, or are about to become redundant, including for the long term unemployed and other disadvantaged people to assist them back into the workforce. ACE also promotes training which is indirectly vocational in that it provides basic skills (for example, literacy and numeracy) or which serves as a stepping stone to participation in the formal VET system.

Following a recent report of a Commonwealth Parliamentary committee on ACE, there are now moves to encourage a more co-ordinated national approach to ACE and to encourage greater linkages with the formal education system.

2.3.4. Workplace Learning

Structured workplace learning in Australia is undertaken through:

Skill Centres are training centres owned either by industry or individual enterprises and have met Government standards in terms of training curriculum. The Federal Government has encouraged industry and individual firms to develop their own training centres through one-off grants of up to 50 per cent of their establishment costs. The ongoing operating costs will be the responsibility of the management group. Many of the centres provide training in advanced technology to enable Australian workers to be trained in and kept abreast of the latest local and overseas trends and developments in their industry.

Since 1987-88 when the initiative commenced, there has been a steady increase in the assistance given to these centres and they have been well accepted by industry. The federal Government has provided funds for over 84 skill centres in 23 industries.

Apprenticeships and Traineeships provide an entry point for young people into trade careers and into non-trade occupations respectively. They involve a combination of structured on-the-job training at the workplace and off-the-job technical education at a TAFE college or other approved training centre.

Group Training arrangements aim to increase structured training opportunities for apprentices and trainees. They achieve this primarily through rotation with a range of host employers; many of these are small companies that do not have the capacity to recruit and train apprentices and trainees in their own right.

'In-house' Training- In addition to the more structured training schemes outlined above most organizations conduct induction and continuing in-house training for their employees.

3. The Role of Vocational Education and Training in Australia's Socio-economic Development

Australia's traditional reliance on commodity exports is being replaced by moves to develop an internationally competitive manufacturing and services sector. This change is being accompanied by efforts to improve the efficiency of all aspects of our domestic economy. Reform of the vocational education and training (VET) system sits alongside other micro-economic reforms, as a central part of Australia's economic strategy for the 1990s.

As well as the structural changes occurring in the Australian economy, technological and workplace changes are also influencing the directions of VET. These changes require workers to have more flexible and transferable skills and to embrace the concept of lifelong learning. This, in turn, is leading to a convergence of general and vocational education and to the development of a training system with multiple pathways and entry points.

In Australia, there is also a strong commitment to social justice and equal opportunities for all citizens. This will be explored more fully later in the paper.

VET is seen, therefore, both as an integral part of the overall education system, providing for individual advancement, and as a key contributor to the nation's economic development.

3.1 The Purpose of Education and Training in Australia

Education and training in Australia aims to provide increased opportunity and quality of life for all Australians. The education and training system is characterized by a heavy emphasis on the pursuit of social values such as equity, equality of opportunity, and discovery and learning.

A vital part of general education, and the primary purpose of entry-level training, is to prepare young Australians for employment. Australia and many other countries are aware that international competitiveness requires the development of a workforce capable of participating effectively in new forms of work and work organization.

To this end, Australia is developing a renewed emphasis on the role of general education in providing the foundation for a multi-skilled, flexible and adaptable workforce as well as a greater emphasis on broad employment-related competencies in VET.

In addition, there is an ongoing emphasis on the development of specific vocational competencies at both entry-level and more advanced levels.

3.2. National Goals and Objectives for Vocational Education and Training

The role of VET is encapsulated in a set of National Goals and Objectives for VET which were adopted by Australia's education and training Ministers in 1992. The broad goals are to:

a. develop a *national* VET system;

b. improve the *quality* of the outcomes of VET;

c. improve vocational education and training *opportunities and outcomes for individuals*;

d. improve the ability of the VET system to respond to the *needs of industry*;

e. improve *access* to and outcomes from VET for *disadvantaged groups*;

f. increase public recognition of the *value of VET as an investment* for both industry and individuals.

The following section deals with some of the major developments occurring in Australia's VET system within the context of these broad goals.

3.3 Major Development in Australia's Vocational Education and Training System

In April 1989 a major policy statement was issued which laid the foundation for the Australian Training Reform Agenda, the aim of which is to create a more diverse and responsive training system while maintaining sufficient regulation to ensure nationally consistent quality training and skills recognition arrangements. The reforms focus on improving the quality, quantity, equity and national consistency of the vocational education and training arrangements.

3.3.1 Competency-Based Training Arrangements

Two of the central elements of this Agenda are the establishment of national standards and the implementation of a competency-based VET system.

The introduction of a competency-based approach to VET has been central to training reform. Competency-based vocational education and training is the key strategy for involving industry in the design, development and provision of training, so that training provision can be more closely tied to satisfying the needs of industry.

The essential aspect of a competency-based approach to vocational education and training is that the delivery, assessment and certification of training should relate to the identification of instruction in and demonstrated attainment of the knowledge, skills and applications required for effective performance at the required level, as defined in competency standards.

In the competency-based approach importance is placed on demonstrating what people can do in the workplace not on how long they spend in training or the amount of knowledge they acquire in formal settings. The system is outcome-oriented. It enables industry to become partnership in the training effort and to specify what they want from the education and training system.

A National Training Board (NTB), with government, employer and trade union representation, has been established to guide the development of national competency standards. The role of the NTB is to endorse the core skill standards proposed by industry, provide advice and assistance to industry and identify areas where national standards may be required.

Industry-based competency standards bodies, most of which are tripartite bodies within the national network of Industry Training Advisory Bodies (as outlined in section 4.1), have the task of developing national competency standards for each industry, for endorsement by the NTB.

These standards are then the benchmarks for curriculum development, the assessment of competency levels(including the recognition of prior learning), training delivery, course and program accreditation, credit transfer and individual certification. The standards form the basis for career pathways based on skill acquisition and, by facilitating credit transfer and the recognition of prior learning, they enhance the development of flexible training arrangements with multiple entry points.

The Australian Committee for Training Curriculum (ACTRAC) is responsible for the development of national, competency-based core curricula covering both on- and off- the job training and for the production of training materials. Increasingly, a modular approach to curriculum development and delivery is being adopted, adding further to the flexibility of Australia's VET system.

3.3.2 Convergence of General and Vocational Education-the 'Key Competencies'

Australia recognizes that the convergence of general and vocational education is necessary for a number of reasons:

a. economic imperatives including the need to raise skill levels and to respond to the growing proportion of jobs requiring thinking, learning, analytical workers;

b. social justice imperatives including the need to open up opportunities for all school leavers in an emerging labour market context where school retention rates have increased significantly and where there has been a decrease in full-time teenage employment opportunities; and

c. findings from cognitive science on learning which show that many students learn best when taught in a practical 'real-life' setting.

In 1991, Australia's ministers for education commissioned a report on *Young People's Participation in Post-Compulsory Education and Training.* The report made far-reaching recommendations such as:

a. the introduction of new national participation/attainment targets;

b. the need for greater attention to the convergence of general and vocational education and the implications of this on education delivery;

c. the development of a wider range of pathways between education and training with strengthened links between the various sectors; and

d. the identification of key areas of competence that are essential for all young people engaged in post-compulsory education and training.

The development of the "Key Competencies', has been one of the major responses to the Report. The reform of entry-level training arrangements, outlined in the next section, was also given impetus by the Report.

Key Competencies have been defined as " the competencies essential for effective participation in the emerging patterns of work and work organization." They focus on the capacity to apply knowledge and skills in an integrated way in work situations. The seven key areas of competence are:

a. collecting, analyzing and organizing ideas and information;

b. communicating ideas and information;

c. planning and organizing activities;

d. working with others and in teams;

e. using mathematical ideas and techniques;

f. solving problems; and

g. using technology.

key Competencies are generic in that they apply to work generally rather than being specific to work in particular occupations or industries. This characteristic means that the Key Competencies are not only essential for effective participation in work, but are also essential for effective participation in adult life more generally.

The proposed Key Competencies are to form an essential part of post-compulsory education and training for all young people, regardless of the education or training pathway they choose or the setting in which they learn.

Consideration is currently being given to the implementation of the Key Competencies, including issues such as assessment and certification arrangements and teacher training needs.

3.3.3 New Entry-level Training Arrangements

The Australian Vocational Certificate Training System

Australia is currently piloting a new entry-level training system known as the Australian Vocational Certificate(AVC) Training System, with a view to its implementation from 1995. It is expected that the AVC system will eventually replace current apprenticeship and traineeship arrangements.

The AVC System is designed to ensure that entrants to the workforce are equipped with both the generic "Key Competencies' outlined above and specific industry/occupational competencies. It will have three or four levels, each articulating to the next, and will provide nationally recognized credentials at each level.

The AVC System will include a broad range of pathways combining education and training and work experience. This will require flexible, co-operative delivery arrangements involving schools, TAFE institutions, private training providers, employers and community organizations. It is also intended that the system will cover areas of the labor market not already well-served with structured entry-level training arrangements, particularly those with a large female labor force.

Pilot projects have commenced recently in both institutional and workplace settings. The pilot phase also involves development of curricula, testing of assessment arrangements, teacher/trainer professional development and the establishment of local industry-education networks.

Career Start Traineeships

The Career Start Traineeship(CST) Scheme was recently introduced building on and enhancing the existing Australian Traineeship System. It is designed in part to enable the industrial parties to gradually move from existing training arrangements to that of the AVC system.

a. The key features of the CST include:

b. the opportunity for greater amounts of structured training time;

c. variable terms of traineeships;

d. the provision of vocational training consistent with the needs of industry and general skills appropriate to the workforce.

e. scope for participation by older workers;

f. enhancement of the skill levels and future employment prospects of CST trainees through various vocational education and training pathways including a combination of work, education and structured training; and

g. the provision of vocational education and training pathways that maximize credit transfer and articulation with higher level training opportunities.

3.3.4. New National Training Authority

Following an agreement in July 1992 between the Commonwealth and State governments, the Australian National Training Authority (ANTA)) has been established and will become fully operational at the beginning of 1994.

While details of the new system are still being worked out, ANTA's principal role will be to undertake national strategic planning for the VET system. this will set strategic directions for the vocational education and training system over the medium term (3 to 5 years) consistent with the agreed national goals and objectives. Based on the national strategic plan, ANTA will work with all State VET agencies to develop plans at the State level for the achievement of national objectives and State-specific priorities.

ANTA will also have a major role in the allocation of government funding for the VET system providing assured funding arrangements. Details of the new funding arrangements are provided in Section 5.1.

A key feature of the new ANTA arrangement is the enhanced opportunity it provides for industry input to planning for the VET system. The members of the board of ANTA are drawn from industry, and the national network of Industry Training Advisory Bodies(refer to page 13) will be closely involved in the development of VET plans at both the national and State levels.

ANTA's priorities for 1994 are:

a. to build a client-focused culture in the vocational education and training system by developing a competitive training market, obtaining better information on client needs, to ensure that the system is industry driven, developing appropriate quality measures, strengthening management practices, and ensuring high quality staff training and development;

b. to create and promote opportunities for life long learning through balanced growth in the vocational education and training system and by encouraging participation at all levels;

c. to advance a national identity for the vocational education and training system consistent with the national training reform agenda and through the encouragement of national co-operative activities; and

d. to reward innovation and best practice in areas such as planning links with industry and resource utilization.

3.3.5. Equity in Vocational Education and Training

As well as recognizing that the VET system has to be responsive to industry needs, Australia also gives a high priority to ensuring that it provides opportunities for all groups in the community. To this end, equity considerations will also play an important role in the national planning processes to be undertaken by ANTA.

In addition, there are many initiatives in place aimed at assisting disadvantaged groups to have access to, and achieve quality outcomes from, the VET system. Many of these are conducted at the individual institution level or in individual States. However, there is also a focus on equity issues at the national level.

Recent initiatives include the development of a *National Plan of Action for Women in TAFE, an Aborignial Education Policy*(which includes initiatives in VET) and the establishment of a *Non-English Speaking Background Consultative Group on Vocational Education and Training*; the progressive implementation of the recommendations of the report *Women in Entry-level Training*, the development of a *National Plan for People with Disabilities in TAFE* currently in progress, *the National framework for the Recognition of Training* which will assist disadvantaged groups to participate in education and training by providing appropriate recognition for their prior learning however achieved and the development of an *AVC Equity Strategy*.

3.3.6 Enhancing the Status of Vocational Education and Training

As in many other countries, VET in Australia has generally been accorded lower status than the higher education (university)sector. Until recently, government funding for VET lagged behind that provided to other sectors and, during the 1980s, Australia experienced declining participation in VET.

Surveys of Australia's young people have demonstrated that many more aspire to a university education than to participation in the VET system.

Greater efforts are now being made to encourage young people to consider VET options and to enhance the general status of VET. Career education programs in schools are an important focus for these efforts. In addition, the Federal government operates a wide network of career information services for young people and the general public and, through these outlets, is providing easily accessible information on VET options.

A national ministerial Task Force to enhance the Status of VET has just been established and will be developing further strategies to ensure that the VET system becomes more highly valued and better understood by the community at large and by employers and young people in particular.

4. The Role of Industry in Australia's Vocational Education and Training System

4.1 The role oof Industry in Training Reform

The role of industry participation in vocational education and training is paramount. There is a need for vocational education and training to be driven by the demands of the market. Therefore fundamental to vocational education and training in Australia is the strengthening of industry, school, TAFE, and higher education links and the encouragement of industry to take a more active role in helping to shape the vocational education and training system and the policies that will direct it.

Employer and industry involvement in training has traditionally been through the provision of unstructured and informal training in the workplace. The fostering of industry demand for education and training will lead to a more structured approach to learning for the workplace.

Industry Involvement with Key Forums

Radical reform of separate training systems in each State and Territory requires national solutions. To ensure that these reforms are attuned to industry needs several forums have been established to enable employers, unions, and the Federal, State and Territory governments to collaborate on the training reform process.

The *Vocational Education, Employment and Training Advisory Committee (VEETAC)* comprises key training officials from Commonwealth and State/Territory Governments. Other members include representatives from the Australian Chamber of Commerce and Industry, the Australian Council of Trade Unions, and the Chair of the National Training Board. New Zealand is also represented. VEETAC provides the advisory and co-ordination mechanism which ensures that the Commonwealth, States and Territories work together on the various aspects of the Government's training reform agenda. It reports directly to a Ministerial council on vocational education, Employment and Training (MOVEET). It has four standing committees and a number of working parties.

The *National Training Board(NTB)* was established in January 1990 to facilitate the development and approval of national competency standards for industry. It is a company limited by guarantee whose shareholders are the vocational education and training ministers. Its board includes representatives from industry, unions and the Federal and State governments. Under the agreement to establish the NTB, the States and Territories adopt NTB approved standards as the benchmark for accreditation of training in their respective jurisdictions.

Industry Training Advisory Bodies (ITABs) act as an important conduit for industry views on training to be put to governments and training institutions. ITABs are autonomous, industry-based bodies representing employers, employees and government. At present there is a network of 155 ITABs in 33 major industries at State and national level representing more than two-thirds of the private sector workforce.

ITABs can be formally recognized as the *Competency Standards Bodies (CSBs)* by the National Training Board for their industry. These bodies are well placed to develop core competency standards on behalf of the industry or occupation they represent.

The *Australian National Training Authority(ANTA)* is seen as the centrepiece for coordinating the new national system of vocational education and training. The ANTA board has a strong industry presence and will maintain close interaction between industry and vocational education and training providers, to ensure that the training system operates within a strategic plan which reflects industry's needs and priorities,(please refer to page 10)

Industry Focus in the AVC System

Consistent with the AVC system's strong industry focus, it is intended that work-based pilot projects will, as far as possible, be industry driven and subject to minimum bureaucratic constraints. To ensure a coherent approach to the development of the AVC within industries so that courses and credentials are recognized nationally at industry level, national Industry Training advisory Bodies(ITABS) or like bodies will operate as national co-ordination committees for each industry so that each new project will be able to build on the progress and outcomes of other pilots.

4.2. TAFE's Involvement with Industry Training

The TAFE system has developed close links with industry to ensure that TAFE courses supply industry with the trained workforce it needs, and to supply specific enterprise-level training.

These links with industry have resulted in industry involvement in TAFE as well as TAFE involvement in many industry advisory structures. The actual mechanism of TAFE/industry interaction varies from State to State but usually includes the following:

a. provision of work experience and placements of TAFE students in industry and cooperation in course development to meet local labor market needs;

b. TAFE representation on Industry Training Advisory bodies(ITABs)

c. staff development activities such as 'Return to Industry Schemes' which is viewed as a major strategy to upgrade teachers vocational kills and to improve the responsiveness of TAFE to the training needs of the industry by providing first hand experience of changing practices and technology in industry.

d. TAFE is seeking to broaden its role so that it is more able to meet the needs of a wider group of people. As previously noted, measures have been taken since 1990 to diversify and expand the national training market, including encouraging greater involvement of private and industry providers and thereby making TAFE colleges more competitive. Through a review of the governances and management of the TAFE system it will be strengthened so that it can also operate on a commercial basis to attract fee-for service business, and compete for business over a wider field.

5. Management of Australia's Technical and Vocational Education System

5.1. Funding

5.1.1. Federal Funding

Australia is continuing to pursue innovative approaches to financing education and training. The challenge is to achieve a balance between public and private funding of education and training and to develop a culture where spending on education and training is seen by individuals and enterprises as an investment not a cost.

In 1992, the State and Territory Government contribution to expenditure on vocational education and training was estimated at A$ 1,835 million or 71 per cent of recurrent funds and A$ 219 million or 34 per cent of capital funds.

While the major financial responsibility for TAFE is a State responsibility, increased Federal Government support for TAFE since 1991 has enabled more Australians, particularly young people, to undertake vocational education and training. An additional A$ 100 million was provided to TAFE in 1992 to respond to the rapid increase in demand for training. This year TAFE will receive A$ 550 million from the Federal Government. Total public sector expenditure on TAFE institutions is approximately A$ 2.5 billion annually (around 0.5 per cent of GDP), with the Federal Government contributing approximately 65 per cent of capital funding and 8 per cent of recurrent funding for the sector.

Under the new vocational education and training system from 1 January 1994, funding arrangements will be more assured with State/Territory governments undertaking to maintain their support for vocational education and training in return for the Federal Government's commitment to growth in the level of recurrent funding of TAFE. The Federal government will provide growth funding of A$ 720m over the 1993-95 triennium on top of the A$ 100 million which has been built into the base of funding for future years. ANTA will receive Federal and State/Territory funds for vocational education and training and allocate funding to State training agencies on the basis of agreed principles. (Refer to page 10).

The State and Territory Governments relative share of contribution to the new vocational education and training system will decline to approximately 55 per cent of recurrent funds by 1995 as a result of the Federal Government's increased contribution.

There are two components of the Federal Government's vocational Education and Training Program which focus directly on the development and implementation of training for the workforce:

a. the government has allocated A$ 270 million in 1993/94 for the Workforce Development component which encourages and assists individuals and industry to improve the productivity and skills of the workforce through participation in, and contribution to, vocational education and training opportunities. It provides support for entry-level training such as apprentices, trainees(including CSTs), for the skills enhancement of the workforce including increasing adult literacy.

b. the Vocational Education and Training System Program provides funding for the TAFE system, grants for the establishment of Skills Centres, funding the development of on- and off-the-job curricula and training materials, catalytic funding of strategic programs of training reform including the development and implementation of the national competency-based training system, development and implementation of the AVC system, funding of ITABs, support for group training arrangements and seed funding to pilot the sponsorship of industry/education network committees. The 1993/94 allocation for these measures is A$ 74 million.

In the Prime Minister's July 1992 statement, *A National Employment and Training Plan for Young Australians*, the Federal Government committed A$ 43.6 million over three years to the development of the AVC system.

Each State also has a system of fees and charges for students in *TAFE institutions*. some courses are run on a fee-for-service basis and others require only a small contribution from students to their total cost. In addition, states have various fee concession or exemption arrangements for disadvantaged students. A more uniform national approach to fees and charges is currently under consideration.

Income support is offered by the government as a means of equalizing educational opportunities by assisting students who are disadvantaged.

5.1.2. Fee-for-Service

There also exists a *Training Consultancy Service* whereby private providers, TAFE and Training Services Australia(a Federal Government unit) undertake skills analysis, develop and deliver customised courses, and provide auditing services to enterprises in Australia and also overseas on a fee-for-servce basis. In some TAFE colleges the revenue from this activity is over 25 per cent of budget. Increasingly they will provide training to meet enterprise requirements on a commercial basis.

5.1.3. Training Guarantee

The Training Guarantee legislation was implemented on 1 July 1990 as a mechanism to stimulate commitment and investment in training since, in the past, expenditure by industry.

The Training guarantee legislation requires employers with an annual payroll of $ 226,000 or more (indexed annually to changes in Average Weekly Earnings) to spend 1.5 per cent of the salary budget on eligible training of their staff. Employers who spend less than the minimum training requirement on eligible training activities in any financial year become liable to pay a Training Guarantee charge equal to the shortfall.

In 1990/1991 employer compliance to the Training Guarantee legislation was extremely high at just under 97 per cent and it was estimated that *employers* spent Some A$ 3.6 billion(about 2.6 per cent of gross payroll) on training. Recent amendments to the legislation provide for the exemption from the Training guarantee of 'outstanding trainers' who are able to show that they spend 5 per cent or more of their annual national payroll on eligible training and that quality training plays an important part in the management of their organization. A major evaluation of this legislation and its impact on skill enhancement will be completed during 1994.

5.2. Staffing

The above reforms will present significant challenges to teaching staff in post-compulsory education and training.

The Federal Government gives particular emphasis to the quality of teaching and learning. It has played a leading role in establishing in February 1991, the National Project on the Quality of Teaching and Learning (NPQTL) to restructure the teaching profession, deal with low teacher morale, and improve the quality of teaching and learning in schools. The NPQTL is due to report later this year addressing such issues as:

a. teacher career paths, the nature of teachers' work, the rewards they receive for this work and the qualifications and skills of Advanced Skills Teachers;

b. teacher mobility, recognition of qualifications across the States and Territories and between school systems, and the portability of entitlement;

c. teacher education, including initial training and preparation, ongoing in-service training, and accreditation and consideration of appraisal to make sure teacher education is relevant;

d. supply and demand, including the status of the profession to make sure there is an adequate supply of high-quality teachers.

TAFE's performance is largely determined by the quality of its staff. There are a number of staffing factors which impinge on TAFE's effectiveness and which are currently being addressed. These are:

a. demonstrated best practice in education and training;

b. workforce with extensive industrial/life experience, appropriate academic qualifications and, in the main, teaching qualifications;

c. the opportunity to recruit part-time/sessional/contract teachers and to enter into secondment arrangements;

d. flexible statements of staff duties;

e. provisions in industrial agreements which create the opportunity for some flexibility in the management of staff utilization.

TAFE staff are being asked to undertake a much wider range of duties requiring a broader range of skills than previously. Staff will be required to possess a high level of professional skills to successfully provide education and training research, design, delivery and evaluation services. Staff will continue to provide traditional teaching services, will substantially expand their role as learning managers and will develop and utilize more innovative techniques as modern educators and trainers.

There are approximately 18,000 tenured (mainly full-time) and 32,000 non-tenured (mainly part-time) teachers in TAFE institutions. The hours of employment of non-tenured teachers is estimated to be equivalent to 10,600 full-time staff. Many staff, particularly part-time staff, have direct industry experience in their teaching fields as well as formal teaching qualifications.

TAFE teachers are required to have extensive industry experience as well as formal teacher qualifications. However, trainers on-the-job, in skill centres or community colleges, tend to possess extensive industry experience but have little formal training experience. Bridging courses have therefore been established to train the trainer.

A major national report identifying the key issues and options to be addressed regarding 'Staffing TAFE for the 21st Century' has recently been completed. Phase 2 of the project will develop strategies for enhancing staff career paths and produce a framework for setting competency standards for all TAFE staff. From there, specific staff competency standards, performance measures and training packages will be developed which will bring TAFE's skills base into line with the many and variable demands of the 21st century.

The Federal Government is providing A$ 12.5 million over three years to 1994/95 as a contribution to the delivery and teacher release costs of in-service courses to prepare TAFE teachers and private trainers for the implementation of the AVC system. In 1992/93 the States and Territories were invited to develop a strategic framework for the conduct of AVC professional development proposals.

Conclusion

Australia, like many other countries, has been required to re-examine fundamentally the whole nature of its provision of vocational education and training in order to develop a system which will be able to meet the challenges arising from economic and technological changes. VET is increasingly recognized as playing an important role in the economic and social development of the nation and as having a central place in the broader educational system.

The reforms in the VET system have contributed to the introduction of competency-based approaches, the focus on the needs of industry , and the provision of more flexible training opportunities for an ever widening group in the community.

The current emphasis is on consolidation of the current reforms and, particularly through initiatives such as the implementation of Key Competencies and the AVC Training System, stronger links will develop between VET and other education sectors, particularly schools.

As Australia's industrial relations system becomes more decentralized and enterprises demand increasingly highly skilled and flexible workers, the VET system itself will need to become even more flexible and adaptable to change. Increasingly, the VET system will also have a contribution to make to the solution of Australia's growing problem of long-term unemployment, brought about by structural changes in the Australian economy. Retraining of workers whose occupations and industries have largely disappeared will pose new challenges for the VET system in the years ahead.

The VET system is already contributing in a very direct way to Australia's international trade by exporting its own services through the provision of training consultancies to other countries and through the training of overseas students in Australia. This area of activity is expected to increase in future, particularly as Australia develops closer links with its neighbours in the Asia-Pacific region.

ACHIEVING INDUSTRIAL RELEVANCE IN TECHNICAL AND VOCATIONAL EDUCATION: THE AUSTRALIAN APPROACH

by

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1. Introduction

The offer of China to organise this International Symposium on Technical and Vocational Education was welcomed in Australia for several reasons. The Australian technical and vocational system, which is known as TAFE (Technical and Further Education), has been actively building links with counterpart systems in other countries, and especially in the Asian Pacific region, over the last decade. These bi-lateral developments have been welcome and are most promising, but as Chair of the national TAFE council responsible for international liaison, I have seen the need for arrangements for collective consultations[1]. This Symposium is thus an answer to that need.

A further and more important reason is the growing concordance of interest and action in technical and vocational education in the international community of nations. The last decade, and the last few years in particular, have seen major and comprehensive changes in VocTech systems in most nations. A no less important change has been the growing national recognition that VocTech has a major role to play in the economic and social development of nations.

These changes are as apparent in Australia as any developed country and are collectively an important part of the National Training Reform Agenda[2]. This Agenda has included major changes to Australian TAFE that have been:

a. comprehensive of most structures and features;

b. co-operative between the key stake-holders, including State (regional) and Commonwealth (national) governments; and are being,

c. progressively refined and extended.

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[1] Over and above the SEAMEO Voc Tech Board on which Australia is a member

[2] See the Australlian position paper to this Symposium for a fuller description of this Agenda

As a chief executive of a TAFE institution working to an elected regional government in the national capital, I can state authoritatively that the gains in performance flowing from the changes are already substantial and are growing.

A major part of these gains are apparent in the enhanced relevance of TAFE to both individual enterprise and collective industry. How this relationship works is the focus of this paper. It is addressed first in terms of vocational courses provided by TAFE for public access, and then in the customised training TAFE provides for industry on a commercial basis. The final section outlines some issues and future developments in achieving industry relevance in vocational education.

2. Industry Participation in Public Access Vocational Education

Australian TAFE has a long and proud record of partnership with industry in vocational education, even if not always smooth working nor properly appreciated. This history reflects the recognition by enlightened employers last century of the importance of a skilled work force, and the development early this century of British style apprenticeship arrangements involving the integration of on-the-job training with vocational education by government colleges (now known as TAFE). Through the middle decades of this century these traditions were progressively extended into non trade skills but still in close collaboration with employers and unions at the local level. By the 1970's the individual colleges were forming into State systems linked to the regional industry organisations. This development facilitated the hard but essential task of extricating TAFE from the control of school authorities. Since the 1970's Australia has been progressively quickening steps towards a more consistent national approach to TAFE, especially following an influential trade unions report on the need to upgrade Australian work force skills. As a consequence Australian TAFE is now working closely with industry - both employers and unions - at local, regional and national level through a diverse array of mechanisms. These are summarised below.

2.1 Curriculum:

TAFE's practice of involving industry representatives in the design of course curricula at local level, has often achieved relevance but at the expense of such diversity in skills and standards that the costs to TAFE, students and the labour market are unacceptable. In response to this problem Australian TAFE has developed since the mid 1980's a very effective co-operative mechanism for development of national "core" curriculum involving both TAFE and industry representatives. This mechanism has been extended recently by:

a. the inclusion of national industry members on the national management committee (ACTRAC), and
b. the decision to make ACTRAC national curriculum available to industry for use in on-the-job training.

A further and critical contribution to industry relevance of TAFE curricula has been the separate but complementary development under the Training Reform agenda of national industry skill standards. TAFE has participated on many of the bodies developing the standards for individual industries, while TAFE Chief Executives are members of the National Training Board that has established the overall framework and endorses industry standards. Once endorsed these standards flow directly into TAFE curricula.

2.2 Teaching:

Unlike other sectors of education TAFE has typically recruited it's staff from industry and then trained them as teachers. The maintenance of industrial relevance is thereafter a major theme in the continuing development of teachers. The knowledge of industry practice is further enhanced by TAFE's extensive use of part-time teachers drawn from experts in industry, thus some 30% of aggregate teaching in my institute is undertaken by part-timers from industry.

This strong background both enables, and is enhanced by, TAFE's firm commitment to situational learning. That is, the development and honing of vocational skills in a setting that replicates typical industry settings. It also means that TAFE seeks to have industrial-standard equipment to achieve greater realism in students learning.

2.3 Course Structures:

Australian TAFE provides courses in both a broad array of technical disciplines to meet the skill requirements of different industries. It has also a diverse array of courses in terms of length, level and outcomes to meet both student and industry needs. Thus TAFE courses can range from short course of 20 hours duration over ten weeks leading to a Statement of Attendance, to three years full time study leading to a nationally recognised Diploma. Entry levels are also diverse to allow adult workers who are illiterate to undertake remedial courses, or skilled trades persons to upgrade to technician level, and also for school leavers to undertake their entry to employment training.

An important feature of TAFE best practice is the structuring of courses to permit multiple entry and exit. This mean workers from industry:

a. can readily find an appropriate level at which to study,

b. can break their studies but still obtain an intermediate credential if work so requires; and

c. can then return at a later date to pursue further skill upgrading with full credit for their prior results.

Such structuring has been facilitated by the steady adoption of modular course components that facilitate greater variety in course structures to meet student needs. In the last few years TAFE has further improved it's services with industry by:

a. introducing processes for "Recognition of Prior Learning" for the assessment of competencies achieved by individuals from prior experience, such as learning on the job. The recognition enables credit to be given in courses and so reduces study requirements to achieve a given skill objective.

b. establishing articulation arrangements not only with schools and universities to facilitate credit transfer between related courses at different levels, but also with accredited courses run in industry;

c. collaborating in the establishment of various joint TAFE -industry training arrangements, such as skill centres, sandwich courses.

2.4 Students:

While TAFE's links with industry through the mechanisms discussed above are all important, the most extensive link with industry is really through TAFE students. Traditionally some 90% of TAFE students have been undertaking courses part time, and typically aim to gain skills for use in their current employment. Furthermore with the average age of Australian TAFE students around 30 years, most courses have students with a rich mix of industry experience to contribute to the class room learning process. While the full time proportion of TAFE students is rising as more school leavers choose TAFE for their tertiary studies, the mix of adult industry experience that contributes to TAFE relevance is being diluted but not lost.

2.5Governance and Planning:

TAFE has long had industry involvement in the councils that oversight individual colleges. However, the last decade has seen the establishment of more formal mechanisms for industry involvement in guiding the direction of TAFE systems at State, and most recently at national level. This development has been complemented by the development of a system of industry training advisory bodies operating at both national and State level, that can be an important source of intelligence and advice for TAFE planning. There is also growing interest in TAFE amongst key professional bodies who are realising that the education of para professional staff is a key to more effective professions.

3. Customised Training

Although the provision of vocational courses for public access dominates TAFE activities, the last five years or so has seen the development of an important new business. This is the marketing and provision of vocational courses to individual employers and industries on a commercial basis. That is, the courses are customised and delivered to the particular requirements of each employer in return for a payment that meets all the costs involved. These courses are:

a. typically short, ranging from one-day workshops to five week courses, but interest in longer courses is now evident;

b. usually adaptations of existing courses, for example by inclusion of employer specific examples or material;

c. provided at the employers premises and/or in TAFE facilities; and,

d. taught by TAFE teachers, but sometimes in conjunction with employer trainers.

This business has grown fast and has not only increased the financial resources available to the colleges/systems involved but has had other benefits. Of most importance has been the increased industry experience gained by the TAFE teachers involved, that has been beneficial both in class room teaching and in the refinement of mainstream curricula. TAFE has also benefited from the direct exposure of staff and managers to the tough disciplines imposed by the market place. On the other hand, not only has industry received vocational training more suited to their requirements, but they and their employees have gained a new awareness and respect for the skills that can be gained from main stream TAFE courses.

This business has made two further but important contributions to the issue of industry relevance. In main stream public courses TAFE is typically bound to provide training in skills that respond to the predominant industry standard and level. In customised training there are real opportunities for TAFE to take the initiative and develop courses reflecting more advanced industrial practice and market these to industry. That is, to work actively to accelerate the introduction of new skills in industry, and even to facilitate the development of new industries.

The second feature of the customised training business is that the government and geographic boundaries that apply to TAFE main stream courses are being crossed. TAFE is now collaborating with industry and university enterprises in the pursuit of business and as a result is delivering customised courses outside their usual localities, and even in different States and off-shore. This development has both gains and pains.

4. Issues and Developments

In a period of rapid, comprehensive and often complicated change it is not difficult to identify issues that need thought and attention. The following list is inevitably selective but reflects an awareness of the debate in many countries and not only Australia.

4.1 Competing Priorities:

As government funding for TAFE has grown more slowly than both demand for places and improving productivity, there are many difficult choices between competing priorities. Thus, governments have been anxious to improve the vocational preparation of their school leavers for employment but cannot do this and sustain the skill upgrading of the existing adult work force. Yet the skills of these adults will dominate the overall economic performance for several decades.

Again in many countries the technical and vocational education sector also carries obligations to contribute to social development. For example, in broadening the employment opportunities for women in non-traditional occupations, in facilitating the skill acquisition and advancement of indigenous peoples, and in assisting students with physical disabilities to gain employment skills. These obligations are proper but often there is little practical guidance from governments as to relative priorities, nor is industry always willing to carry their share of the partnership.

4.2 Who is Industry?

I am very accustomed to being urged to be more responsive to industry but it is not always clear who is industry. As industry typically comprises many individual enterprises, often competing vigorously with each other, establishing who is the spokes person for the whole group can be an art, and a dynamic one at that. There is in Australia a presumption that the industry components in the largest capital cities are the appropriate advisers to TAFE but this can be vigorously resented and opposed by industry in other cities and provincial areas. Similarly there is a presumption in market economies that industry means only private sector enterprises. That is, the public sector is not an industry and/or there is no need for upgrading the skills of the government work force. Working in the national capital with a very effective government service it is still easy to identify scope for further upgrading and we are actively collaborating with this "industry" to mutual benefit.

Even if we can reliably answer "who is industry?" there is a subsequent issue as to "who is responsible to whom for what in a responsive VocTech system?". I am also experienced in responding to the strident requests from an industry to introduce public courses to meet their pressing needs, only to find that demand was subsequently not realised. Nor were the industry advocates around to explain their part in the consequential waste of public funds. If public VocTech institutions are accountable to their government what accountability attaches to industry? Perhaps these problems are lesser in command economies but the growing advocacy of training markets rarely canvasses such practical issues.

4.3 Funding Sources:

Australian TAFE has traditionally relied on government funding for all recurrent and capital needs. The sustained squeeze on government budgets despite steady growth in demand for TAFE places, has required TAFE to develop it's non Government revenue sources. This has partly come from student fees (now contributing some 8% of tuition costs in my institution) and partly from the results of commercial activities including export of educational services. What is striking is the relatively modest level of direct financial contribution made by industry. Yet it is industry who both gains from the quality and quantity of vocational education and who enjoys such direct influence on the pattern of provision. It seems fair to ask how careful will industry be in their advice to VocTech systems on requirements, if they have little or no money at risk in pursuing these requirements?

4.4 The Standing of Technical and Vocational Education:

It is commonplace for meetings such as this one for participants to share regrets at the low standing of VocTech in their country. It is also easy to exchange diagnoses as to the cause - usually cast in terms of the social standing of the professions and universities. It is less common to have a thorough discussion as to:

a. what is this standing in different industries ad community sectors,

b. how this perceived standing impacts on VocTech provision in practice; and

c. what are the most cost effective ways to improve the standing in key areas.

These are now major issues being addressed at a national level by Ministers of governments, and by Australian TAFE through a structured approach. This involves market research and currently the development of a concerted marketing strategy at all levels. Hopefully this will identify a significant role for our industry partners in achieving a mutually beneficial enhancement of TAFE standing.

4.5 Internationalisation:

In so far as most countries are actively working to improve their economic performance by becoming more internationally competitive in world trade, there are clear implications for VocTech if not yet fully recognised. In Australia the first response has been the development by TAFE of a significant export market for overseas students undertaking the longer vocational courses This development has significant potential benefits to TAFE and local industry, in terms of cross cultural understanding and development of future business contacts, but these have still to be fully realised. There is also an active interest in providing expertise to major VocTech projects funded from bi-lateral and multi-lateral aid programs, but there may be more benefits from TAFE collaboration with Australian firms competing for business off-shore, and with foreign firms doing business in Australia.

There are, however, two major challenges that have yet to be given proper attention. The first is the task of starting to identify the evolution of international skill standards. That is, as a growing proportion of industrial activity is undertaken by firms operating across continents (eg. in telecommunications) we can expect to see trans-national skill requirements merge. There is neither a mechanism for identifying such standards nor a forum to discuss such implications for national VocTech systems.

I also see the need for a consideration of the processes for bi-lateral, and ultimately multi-lateral, recognition of VocTech qualifications and graduates in Europe and more recently Asia. There is scope for discussion as to how an equivalent development in VocTech in the Asian Pacific basin might be fostered, and the benefits to industry it would produce. In this regard I note that Australia has both good experience in recognition of overseas qualifications, while Australian TAFE is currently undertaking two studies in neighbouring countries as the first moves towards better recognition of TAFE qualifications. These may be a useful contribution to a broader effort.

Finally I am also a strong advocate of building links between comparable VocTech institutions in different countries as a means of sharing best educational practice, and exchanging staff and students, The number of such links in Australian TAFE is growing and will grow faster as this decade unfolds.

5. Conclusion

The mechanisms for linking TAFE and industry are important and guidance on various key issues would be helpful. However the performance of a VocTech system is best indicated by the educational outcomes that students achieve and the performance of graduates in the labour market. Unfortunately few VocTech systems have been able to report regularly on such dimensions. To meet this need Australian TAFE is well advanced in a comprehensive reform of it's statistical and management information systems to ensure that performance data is regularly and reliably available. In the meantime some partial results are re-assuring.

In Canberra Institute of Technology some 75% of students satisfactorily complete their subjects each year and less than 15% are drop outs. Both statistics have been improving steadily in the last four years. A national level a recent survey of TAFE graduates from 1992 found more some 70% in employment, and most using their vocational skills in this employment. In both respects these are significantly superior results than from a comparable survey of university graduates.

These are clearly encouraging signs of good performance but are not necessarily sufficient. Australian TAFE has therefore committed itself to implementing a set of key performance measures based on the National Objectives for Vocational Education and Training. In addition it is actively looking to exchange operational and performance data with VocTech Systems and institutions in other countries as a means of "bench marking" our performance and so identifying areas for further improvement. Perhaps this might strike a responsive chord amongst other participants at this Symposium.

TECHNICAL TRAINING IN BRAZIL AND PROSPECTS FOR MODERNIZATION OF THE COUNTRY

by

Professor Iunci Picerni Bavaresco

To have more realistic understanding of the role and functions played by technical and vocational education in the social-economic development of Brazil, we must consider not only its physical, organic and natural features, but also the cultural aspects that influence its economic and social-political composition.

Our country has continental proportions, covering 8,511,965 sq. km. The largest part of the land is situated in the intertropical zone and comprises three temperature ranges, six climatic sub-divisions and four annual rainfall levels. These features are governed by large river basins and by specially rich and fertile soil with exuberant vegetation including various types of forest, woodsy pastures, caatingas, swamplands, grasslands and coastal vegetation and also large suboil mineral reserves.

With an average population density of 18 inhabitants per sq. km., our population, formed by mixed races, totals 153 million people who, due to concentrated development, are spread unevenly throughout the country. In the North and Center-West regions, with large uninhabited areas, we see the quickest demographic growth. This phenomenon occurs at the boundaries of agricultural and mining activities. On the other hand, the Northeast, Southeast and South are more populated. In the case of the Northeast this is due to its earlier settlements and vast sugar-cane plantations; in the case of the Southeast and South, population growth is driven by industrial development and diversified farming.

Putting the size and differences to one side, today all these regions have important economic centers, both in the agricultural and industrial sectors. However, there are great disparities in the level and pace of their development, leading to a distorted growth in Brazil, including the State of Sao Paulo, the most dynamic and advanced of the country, where small areas, of sophisticated urbanization and advanced industrial and technological production coexist with vast areas surviving below poverty line, totally lacking infrastructure and access to any kind of benefits.

To reverse this cruel progress dynamic that generates serious social distortions, we must, basically, put an end to the negative influences of history, overcoming the psychological effects of slavish origin, which chain us to a model of society already obsolete in many capitalist countries. Contributing to keep the economic status quo, we have, on one hand, the labour masses, heterogeneous and for the most part submissive, without power to organize and negotiate to constitute themselves and be recognized as a collective unit and, on the other, the watching power of domination, exerted by an elite so far incapable of fundamentally changing the relations between capital and labour.

Considering the great economic potential of our country, its development has been harmful for most Brazilians and to such an extent that the degree of inequality of income distribution in Brazil is perhaps the highest among nations in the process of industrialization, and for this very reason it is difficult to achieve, in the medium term, a welfare State which embraces the entire population.

These considerations, no matter how general they may be, allow us to identify the importance of a high standard basic education, duly designed for a country like Brazil, whose needs are at the same time to prepare for citizenship, by including greater numbers of the population in the political and social process, and to train workers to accompany developments in new technologies. Skilled labour alone, with better use of the specific features of our potential, may give our domestic products the standards of competitiveness required by foreign markets, thus creating the wealth we require to raise the standard of living of most Brazilians. Therefore, primary and secondary education and, in particular, technical and professional training represent one of the most vulnerable points of economic development, because our systems are not strong or comprehensive enough to confront scientific and technological advances necessary to encourage our industries to modernize and expand.

It remains for Brazilian society to reopen a decisive and emphatic debate on basic education in order to establish clear parameters of priorities for this sector, in face of its relevance to the present social-economic situation of the country.

Before we address the question of specific technical training systems, it is interesting to note that, in the 40s the urgent need of skilled labour, caused by the industrial sector and growing urbanization, resulted in the so-called Education Organic Laws, also known as the "Capanema Reform". Approved between 1942 and 1946, they consolidated the dual spirit of the Constitution of

1937 which assured the less favored classes public pre-vocational and professional training, and academic training for the privileged classes.

The implementation of this system, besides reaffirming the propaedeutic characteristics of secondary school, traditionally designed for the elites, organized public education, with a view to job training, in four distinct and closed branches; that is, without any communication either among themselves or with secondary education. The latter, in turn, allowed access to any school of higher education.

Reflecting the trends of the educational community and urbanized segments at the time, the Brazilian Educational Policy and Guidelines Act (Law no. 4024/61 - "Lei de Diretrizes e Bases da Educacao Nacional"), was an important step towards unification of secondary education, already provided for in Federal Law no. 1076/50 and allowed not only equality between the different courses (secondary, primary school teacher's training, industrial, commercial and agricultural), but also adapted syllabuses to allow students from industrial, commercial and agricultural courses access to higher education. In fact, by introducing compulsory subjects in the curriculum of different courses, aiming at flexibility in the organization of syllabuses to serve different communities, the Educational Policy and Guidelines Act was able to annul almost all the negative effects of the educational dichotomy brought about by the "Capanema Reform".

However, it was Law no. 5692/71 that established a primary school of eight years and secondary school of at least three years, in an attempt to definitely conciliate academic and professional training. With the purpose of not only preparing students to follow on their studies but also of qualifying them for work, the most daring aim of this law was to make professional training compulsory for all secondary courses. Because of a series of cultural and social-economic factors, this model did not succeed and was amended by Law no. 7044/82 which, among other provisions waived that requirement. Thus, schools now offer professional training at their own discretion.

In fact, the Brazilian educational system in the last three decades aimed at providing the same education for all, with the purpose of allowing continuity of studies based on general education and by means of specific training for entering the labour market. However, because of unsatisfactory results obtained so far, new efforts to adapt the model will have to be made.

As a result of the failure of this experience, previously structured State and Federal technical schools, have recovered their identity, being considered again as differentiated units within the system.

Before focusing on these institutions, we will present some important data concerning SENAC's Private Technical Training System and the Federal Technical Training System, aiming at a better understanding of these two types of organization:

NATIONWIDE PRIVATE TECHNICAL TRAINING SYSTEM - SENAC

1. **SENAC's schools (National Service for Commercial Learning):** 519 units, distributed among 24 States and the Federal District (Brazil's Capital district).

1.1 Administrative Structure:

Organization and Management
Confederacao Nacional do Comercio - Rio de Janeiro. (Ntl. Confederation of Commerce)
Inspection agency:
Conselho Fiscal (Auditing Committee) - Rio de Janeiro

Normative agencies:
Conselho Nacional (Natl. Committee) - Rio de Janeiro
Conselho Regional (Regional Committee) - State Capital cities

Administrative agencies:
Departamento Nacional (Ntl. Dept.) - Rio de Janeiro

1.1.1 Operational Unit (States)

Management
Administrative Section
Professional Development Section
School Secretarial Services
Technical Documentation Services
Regional Departments - in State Capital cities

1.2 Legal Status:

Private Law entity - private administration under public control

1.3- Source of funds:

Compulsory Income	52%
Operating Income	18%
Financial Income	27%
Agreements/Contracts	3%

1.4 Financing Mechanisms:

Compulsory contributions provided for in law (1% of the payroll of companies in the commercial and services industry.

Contributions are paid into the Social Security Pension Fund (INSS) to which companies are affiliated and are transferred to SENAC National Department. It, in turn, transfers to the Regional Department 80% of the total amount collected, in twelve installments, forecast in the annual budget. INSS will transfer balances in contributions, if any, throughout the year.

1.5- Education: Not free, but partially subsidized.

1.6 Supplementary Systems:

Scholarships
Training Programs in Companies
Vocational Counseling
Job Placement Office
Refresher Courses for Teachers

1.7 Education Requirement for Faculty Members:

University Degree

1.8 Courses Levels:

Adult Education: Professional Training I
(Primary and Secondary)

Professional Training III
(Secondary)

Professional Training IV

Further Education: Specialization

Finishing
Training (operational)

1.9 Courses Duration:

P.T.I	6 months
P.T.III	6-12 months
P.T.IV	18-24 months
Specialization	3-6 months
Finishing	12 months
Training	1-2 weeks

1.10 Major Curricular Areas:

Technical Training
Technological Training
General Education

Schools only provide vocational aspects, taking into account the professional and graphical profile of the training, i.e., the nature of the tasks and knowledge required. Therefore, it is an integral and comprehensive training program, designed to prepare the citizen for a working career.

1.11 Distribution of Specialization Fields according to economic areas:

Administration Technician
Prosthetic Dentistry Lab Technician
Fashion Design Technician
Coffee Classifier and Taster
Microcomputer Programmer, etc.

Obs.: SENAC's network offers about 40 different specialization /qualification courses in the tertiary sector.

1.12 Facts and Figures relating to the country as a whole (year 1991)

Number of schools....................................519
Number of teachers, instructors and vocational training agents 14,272
Number of students.................................1,281,523
Drop-out rate... 10.4%

1.13 Admission:

After meeting requirements established for each course or qualification, candidates are selected through qualifying exams.

Similarly and with the same potential throughout Brazil, SENAI's network - organized and directed by the Confederacao Nacional da Industria (National Confederation of Industries) - provides courses and training in the secondary sector (Industrial and Transportation fields), such as: Mechanics, Building Construction, Transportation, Electricity/Electronics, Metallurgy/Steel Metallurgy, Plastic/Rubber, Chemistry, Paper/Pulp, Ceramics/Non-Metallic Minerals, etc.

Nevertheless, we cannot fail to mention that as of the 70's SENAI implemented a new teaching modality, by introducing regular Secondary School courses, namely, complete courses which included general and vocational studies, as provided for in Law No. 5692/71.

During 1992, SENAI operated a total of 869 units, 564 of which are fixed and 305 mobile; 6,394 teachers, instructors and educational agents; 1,761,213 students; and a drop-out rate of 4%.

As a result of peculiarities inherent to their organizations, SENAI and SENAC, as well as other smaller schemes (such as the automotive and banking industry), which are more specifically concerned with professionalization and subsequent placement of their new graduates in the employment market, besides having closer connections with the working class, basically recruit their clientele from these segments.

FEDERAL TECHNICAL TRAINING SYSTEM

1. Schools belonging to the Federal Technical Training System - 61 educational institutions scattered throughout the States of Brazil: 19 Federal Technical Schools (ETFs), 5 Federal Technological Education Centers (CEFETs), 37 Federal Technical-Agricultural Schools.

1.1 Federal Technical Schools (ETFs):

15 States/1 unit per State;
2 States/2 units per State

1.2 Administrative Structure:

Ministry of Education and Sports - Brasilia
National Department of Secondary and Technological Education

1.2.1 School Unit (in the States)

General Management
Senior Council
Technical-Consulting Council
Support and Extension Courses Department
Human Resources Department
Teaching Development Department
General Administration Department
Data Processing Department
Planning Department

1.3 Legal Status: Federal Government Institution

1.4 Source of Funds:

Federal Government	95%
Agreements with Federal agencies	2.5%
Generation of internal resources	2.5%

1.5 Financing Mechanisms:

Annual Budget Plan, approved by the Congress (Congresso Nacional).

1.6 Education: Free

1.7 Supplementary Systems:

Scholarships
School-Enterprise-Community Integration Service (SIEEC - for training programs in companies)
Educational Counseling Services
School Fund (assistance to students)

1.8 Education Requirement for Faculty Members:

University Degree

1.9 Courses Level: Secondary (Intermediate Level)

1.10 Courses Duration: 4 years, including training period

1.11 Major Curricular Areas:

General Knowledge
Technical Training
Compulsory Supervised Training Program (in companies)

With regard to the CEFETs (Federal Technological Education Centers), it should be noted that though accounting for a limited universe in quantitative terms, these units stand out because of the qualitative progress achieved. These schools, apart from providing intermediate studies, also offer graduate and post-graduate courses "lato sensu".

Their management is considerably more decentralized and hence, more dynamic and effective, even generating income, by selling products and services. Obviously, this fact has increased the potential of these centers, both improving them physically (facilities and equipment) and also enabling their teachers to take refresher courses more often. This brings renewed perspectives and effective cultural and methodological progress to their schools.

As for the Federal Technical-Agricultural Schools, they provide secondary level education and their managing system is directly related to the National Department of Secondary and Technological Education.

1.12 General information on the 3 groups of Federal Technical Schools in Brazil:

1.12.1 Distribution of main fields of specialization according to economic areas:

Primary Cattle-Raising and Agriculture Technician (several specializations)

Secondary
Mechanics
Electrotechnics
Electronics
Construction, etc.

Tertiary

Tourism
Telecommunications
Industrial Computer Sciences
Data Processing
Food Technician, etc.

Obs.: The Federal System offers about 35 fields of specialization, with secondary level qualification, within the three sectors of the Economy: primary, secondary and tertiary.

1.12.2 Number of schools.............61

Number of teachers 10,000
Number of students.............100,000

1.13 Admission: Selection through qualifying exams.

Furthermore, as a result of a joint program between the Federal Government and townships, there are now technical and agricultural schools of primary level. The Ministry of Education and Culture (MEC) is in charge of building schools and purchasing equipment, whereas local Governments are responsible for the maintenance and management of units in their cities.

Apart form the Federal system, Brazilian states have their own technical training system. Sao Paulo, for instance, has State or Municipal public institutions, besides private entities dealing with this field of education. Despite being ruled by the same regulations, the State public sphere has three technical training systems (secondary level), entirely independent both administrative and educationally. The largest belongs to the State Division of Technological Education (DEET) - an agency of the Department of Science, Technology and Economic Development of the State of Sao Paulo. With 84 schools (49 of which are technical and 35 agricultural) and totaling 3,528 teachers, this Division gives assistance to a universe of 55,093 students. The Division of Inland Education (CEI) system - agency of the Department of Education of the State of Sao Paulo - has 28 units within the regular school system. "Paula Souza" State Center for Technological Education, a Government institution affiliated to the "'Julio de Mesquita Filho" University of the State of Sao Paulo and related to the Department of Science, Technology and Economic Development, comprises 14 schools, 1,300 teachers and 22,100 students. In addition to the secondary level system, "Paula Souza" Center is in charge of a university level institution, FATEC (College of Technology). Thus, the Center is responsible for technical training in both levels.

Moreover, we also have a municipal public system and a system of private and parochial schools. These, together with SENAI, SENAC and other similar institutions, account for the technical training private sector, with a wide range of specializations, in various levels, and types of courses.

However, taking into consideration the present day outlook of technical training in Brazil, we notice that it concentrates mostly on the secondary level. On the other hand, we also note that most school places are in the private system, and fees are either paid in full or subsidized; in this case, monthly tuition is lower than that of the market, as is the case of SENAI and SENAC. Private systems also grant partial or even full scholarships. This is the case of SENAI, and it applies to most of its clientele. Generally speaking, we may say that technical education plays an important role in training skilled labour. Nevertheless, it does not meet today's specific demand by the employment market, either in qualitative or quantitative terms. In fact, the introduction of this kind of learning in Brazil has faced several difficulties of social, cultural, economic and financial nature. This hinders the pace of growth and improvement that would otherwise be compatible with Brazil's potential for development. On account of this, professional training is still discrete and restricted, in the sphere of technical educational services. We must therefore take into consideration five critical points, which to a certain extent are to blame for the morose development of those systems:

1.13.1 Financing and Management - After a brief analysis of the technical information on SENAC's Private System and on the Federal System, it is noticeable that notwithstanding the differences in these systems, the better results achieved by the former, as far as educational activities are concerned, are an outcome of the financing and management procedures used. In fact, besides compulsory contributions, SENAC makes feasible other sizable receipts through financial investments, agreements with companies, and sale of products and mainly advisory and consulting services. On the other hand, this results in more flexible and efficient administrative mechanisms, granting programming autonomy to the system operational units., The latter, in turn, meet their goals, through good and efficient performances.

But the situation is quite different in the Federal System, and consequently in the states and townships, financed by public funding that are provided for in the budget plans of their respective Governmental agencies. These plans, which are drafted six to eight months before being submitted for approval of the corresponding legislative branch (the Congress, House of Representatives or City Council), allocate funds that are incompatible with the real annual school spending. Likewise, supplementary allocations do not make up for the balance, since they are uncertain and again subject to much red tape. Similarly, the centralized administrative model does not encourage managerial innovations, which are imperative to make the units more dynamic and efficient. Although of acknowledged importance to the development of this field of education, involvement with local production industry, aiming at joint ventures, agreements and contracts, only accounts for isolated and still incipient projects in this sphere of action. So far, they have been totally dependent on public allocations and fallen short of acquiring more adequate means to achieve the goal of technical and educational efficiency they set for themselves. Therefore, to the exception of the CEFETs, which as mentioned before have reached significant levels of autonomy, all other schools are part of the direct administration of their respective institutions, including Government agencies, since they do not fully use the prerogatives of this type of organization.

1.13.2 Creation and Building of Schools - At the time of the introduction of their programs, public administrative institutions (whether Federal, State or Municipal) are subject to strong pressure from local and regional political groups, which, unfortunately, not always side with the nature, objectives and commitments of those projects. On account of this, political interference wastes significant shares of funds earmarked for education, when politicians disregard the true criteria for the creation and building of technical schools; as a matter of fact, these are the most expensive in terms of equipment and maintenance. Because of total inexistence of funds, there are incomplete units with no prospects of being completed successfully and other schools operation in a precarious way as a result of lack of maintenance.

1.13.3 Equipment - It is impossible to purport to train professionally skilled labour without having the tools required for essentially practical learning, the result of which involves above all know-how. The lack of adequate materials and equipment puts at risk the whole methodological concept, because it reduces the efficiency of procedures involved. Therefore, this is a key-point for school units that depend on public institutions, always facing budget problems. If some restocking or renewal of equipment is required, it will have to undergo a long-term process. Rapid technological development making inventions obsolete in a very short period of time, it is perfectly possible to understand the adverse conditions in which such schools try to achieve their objectives.

1.13.4 Faculty Members - We cannot fail to recognize the lack of preparation of most state school teachers. However, this is not a question to be addressed in isolation, as if the solution resided only in the problem itself. First of all, we must remember that this lack of preparation can be explained mainly by teachers living and working conditions (the living and working conditions of teachers). It is timely to remember that, as the public education system absorbed a more significant portion of low income population, technological developments opened more sophisticated opportunities for academic achievements, facts that presuppose that teachers have better cultural and academic levels. With few exceptions, salaries are below comparable market rates, teachers are overloading themselves with other activities for their own survival.

We cannot employ well-qualified teachers for public schools without realistically considering the question of their salaries. In a capitalist society, pay is not the only criteria (criterium) but, undoubtedly the one that prevails. Without competitive salaries, recruitment for the educational sector is already compromised by having to select lower quality candidates.

Furthermore, and perhaps more dramatic is the teachers career prospects. Without a satisfactory career plan and with low acquisitive power, the great majority of teachers of primary and secondary schools, submerged in routine work are unable to participate in a more comprehensive and advanced cultural life. If we do not reverse this situation, any projects for developing and retraining of teachers, no matter how good they are, are doomed, because they will not have the required basic knowledge on which to develop themselves. The problem is not with the career development projects themselves but with the actual situation within this context.

1.13.5 Students - Two major reasons contribute to the students being unsuitable for secondary technical schools. First, the inexistence of a systematic vocational counseling program to enable young people to identify and decide their occupational roles. Frequently, this factor contributes to difficulties and delays the process of teaching those attending these schools. The second reason is related to the indiscriminate channeling of young people from the medium segment of society into these institutions, mainly the state and federal ones because of the better quality of training offered.

As a rule, these students do not intend to join the work force but they look for university places as soon as they complete secondary education. Thus, we must consider that both aspects work as reduction factors of these systems capacity to produce technicians for the labour market.

The public systems, however, suffer from infrastructure problems. Without solving these problems, schools will not be able to offer a structure to enable them to carry out their objectives and programs. Although this point may seem obvious, in practice it has not been addressed directly by local authorities and society as a whole. They try to operate at structure level, ignoring infrastructures, which may result in apparent improvements that cannot give the system the desired modernity. By acting in this way, we have an assumed administrative independence, an assumed qualified faculty, assumed adequate resources and so forth. Considering the great interest and efforts that have been undeniably placed in education, we have not been able to advance as expected, failing to realize important goals in the qualitative and quantitative areas. It is therefore imperative not only to recognize the archaic infrastructure of our educational system, but also to act to change it. One of the main indications of this need is characterized by human evolution, in different periods of the civilization process. For 10,000 years of agricultural revolution, we have something like 300 years of industrial revolution and maybe much less for future revolutions dominated by technology. It is not a question therefore of preparing schools to assimilate the changes resulting from the substitution of the Taylorist model by Total Quality Management; it is rather a question of conditioning the capacity of schools to adapt models to an economy geared by technological development. There is little advantage in introducing innovations from top to bottom in this system, only at structure level, because the results are dependent upon numerous variants, which will always be relative, variable and unpredictable. Logic has shown us that we must act first or concurrently at infrastructure level, that is at the level of those elements and mechanisms capable of generating and sustaining the structure. In other words, we must reorganize the basis of schools in such a way that they will take a new direction towards achieving administrative and intellectual independence and to this end concentrate on three important areas: finance, management and human resources.

Regarding financing, present criteria have conditioned schools to a very strict operational plan, because besides a shortfall of funds, caused by the inflationary economic regime, they still do not participate in the financial funding plans, and face many difficulties to establish their programs. Management of the units are compromised by these restrictions within the red tape formalism of centralized administration. Lacking autonomy power, it is impossible for management to rationalize the procedures, aimed at greater efficiency of the system. Administrative independence is essential for the student selection and counseling process, to realize potential and skill and to place students in suitable positions in the local and regional employment markets.

The third, and perhaps the most challenging point, relates to human resources, as there is no possibility of organizing a live and efficient school without qualified and motivated professionals. Independent schools presuppose intellectual independence. This is even a consensual idea. No one, in their right minds, would oppose to such statement. However, efforts in this direction have concentrated on structure level, when in fact it is a problem of cultural infrastructure. It is impossible to achieve an effective structure and function without having a proper cultural infrastructure. This is precisely why retraining programs, although still running more sporadically than systematically, do not succeed. No matter how general these programs may be, they always represent private interests, depending upon a basis of knowledge that they alone cannot provide. Consequently, in such situations, all implications of an economic-historical contact, catalysts of change, cannot be reproduced. Therefore attempts to retrain teachers are fruitless unless we firstly or at the same time provide them with conditions to perceive the more general and comprehensive world in which we live. Their physical, political and social phenomena as well as ideological and economic pressure are in constant agitation. When the market requires a technician with further education, with a betteer understanding of the more sophisticated working world, where more refined and wider human and operational capacities are demanded, it is impossible not to promote teachers' value, who without acquisitive power for a long time, have lost a solid basis of knowledge. This basis is fruit of cultural habits implied in life conditions, and only complements specific projects of retraining.

In this way, to ensure educational reforms, promoting better "teaching qualifications" implies salary policy reforms that are in course to redirect vocations and encourage real competence.

To change infrastructures is, undoubtedly, long-term and complex work. Its attainment in a given area does not happen in opposition to the model that characterizes the set administration of a country. On the contrary, it should find in it the support and mechanisms to assure it total feasibility.

The implementation of the measures examined here is not a fact in isolation, but presupposes a redefinition of the role of the country, of the states and towns in carrying out a program of non-concentration of power and consequent decentralization of decisions, resources and responsibilities. In other words, to find financing, to establish independent concepts of management and to provide a salary policy to recover the educational sector are measures that may only result from a proper modernization of the Brazilian state as a whole.

BIBLIOGRAPHY

Beisiegel, Celso de Rui, Estado e Educacao Popular (Pioneira, Sao Paulo, 1974)

Bohoslavsky, Rodolfo, Orientacao Vocacional: A estrategia clinica (Martins Fontes, Sao Paulo, 1991)

Goldemberg, Jose, O repensar da Educacao no Brasil (vol. 3, series Educacao para a Cidadania, Documentos, Instituto de Estudos Avancados, Universidade de Sao Paulo, 1993)

Meneses, Joao Gualberto de Carvalho et al., Diretrizes para o Ensino Tecnico em Sao Paulo (Acta-Revista do Conselho Estadual de Educacao, IMESP, Sao Paulo, 1992)

NEPP/UNICAMP - FECAMP - SCTDE (SP), Diagnostico e Avaliacao do Ensino Tecnico na decada de 80, tendo em vista sua adeguacao as tendencias economico-tecnologicas dos anos 90 (NEPP, Sao Paulo, 1991)

O'Donnell, Guillermo and Reis, Fabio Wanderley et al., A Democracia no Brasil - dilemas e perspectivas (Vertice, Sao Paulo, 1988)

Pauwels, pe. Geraldo Jose, Atlas Geografico (Melhoramentos, Sao Paulo, 1993)

Rama, Leslie M.J.S., Legislacao do Ensino: uma introducao ao seu estudo (E.P.U. - EDUSP, Sao Paulo, 1987)

Relatorios Anuais do Seervico Nacional de Aprendizagem Industrial, (SENAI, Sao Paulo, 1992 e 1993)

Skidmore Thomas, Brasil: de Castelo a Tancredo (translation Mario Salviano Silva, Paz e Terra, Rio de Janeiro, 1988)

VOCATIONAL AND TECHNICAL EDUCATION IN CANADA ---CURRENT TRENDS AND ISSUES

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Introduction

This document represents personal judgment and opinion - not the official positions of any organisation. It consists largely of extracts from monographs produced at the Centre for Policy Studies in Education at the University of British Columbia, the Association of Canadian Community Colleges, the OECD, staff of Douglas College, personal writing and UNESCO reports.

The form of the paper is that recommended by the organizers of the Symposium. However, Canada represents a complex geo-political reality, with significant regional differences in geography, social history, and economy. This makes generalizations and tidy descriptions quite difficult. Therefore, some repetition is necessary.

It is important to remember that the primary fact about Canada's education system is that there is no system as such. In fact, there are 10 provincial systems, a contentious federal system, two territorial systems, and constant interaction and influence among them. This statement also holds true for the economy/economics of Canada, and the socio-political values of the different regions.

1. Role and Function of Technical and Vocational Education in the National Socio-economic Development

The history of education in Canada is well-documented through the colonial period, with the transfer of traditional educational values and systems through class structures and church affiliations which originated in England, France, Scotland and other parts of Europe. Much of this gave rise to the public and church supported primary and secondary school systems, as well as to the emergence of the traditional universities.

The early elements of vocational training were found outside this education system in the craft guilds (apprenticeships), groups of skilled workers such as the masons and printers. Later came such organizations as the mechanics institutes which paralleled the development of steam technology and the railroads.

The agricultural nature of early development in Canada, including western Canadian settlement, provided the impetus for the expansion of vocational forms of agrarian adult education. One prominent and fairly early feature of this growth was the formal emergence of cooperative agricultural extension education. This early form of vocational-adult education linked farms and the early agricultural colleges (some of which evolved into universities). These institutions were similar to the 'land-grant' colleges established with the westward expansion of the United States. Training and education was practical in nature and intended to be directly supportive of production, competition, and economic development.

It is important to keep in mind that this early stage of vocational-adult education coincided with the early development of a resource-based economy which still characterizes Canada to this day.

The development of a significant manufacturing base came much later in Canada's economic history, and very much later with respect to the industrialization of Europe and the United Kingdom. This was restricted to Ontario and Quebec - "Central Canada".

There simply was not an industrial infrastructure within which the early craft guilds and groups of artisans could flourish over time, and emerge into a clear vocational training system.

Historically, this is the single most important factor underlying the difference in vocational training between the older industrial economies and Canada. The dominance of the Canadian university system during the intervening years of development and the value placed upon this form of education by Canadians and their governments has been a direct consequence of this historical beginning.

Vocational training did emerge in the public school system, following along the lines of the tradition trades of woodworking, metal working, and mechanical technologies. Unfortunately, this form of vocational training often was viewed as the best choice for those not intellectually gifted enough to pursue a general arts education at the secondary school level and continue with a university education. It led to a "two class" system in secondary schools that was never supported by the general public.

The large scale emergence of post secondary level vocational training truly was a post-World War II phenomenon. The 'community college' was born and imported to Canada in the late 1950s and early 1960s, and in various forms is the main provider of tax-supported school-based technical and vocational education. In some jurisdictions, the model has taken on the appearance of the 'junior' community college, another 'idea' from the United States, which featured course and program offerings having university transfer credit value.

This system exhibits variations both of a prominent and of a subtle nature between the provinces. The central characteristic is that it is a school-based vocational training model, organized and controlled by provincial government and indirectly by the Federal government, through funding policies and contracting education.

Thus, vocational/technical education in Canada as a mass activity is a recent phenomenon. Its social and economic significance is still questioned by many.

Perceptions of the Canadian public about such training are important to understanding the general status of vocational training in the country.

Professor John Walsh of the University of Guelph has released the results of surveys conducted between 1988 and 1991 about the attitudes and perceptions of students, parents, apprentices, journeypersons, and employers towards careers in skilled trades. He found that while parents attributed value to the skilled trades along with respect, good income, and security, parents simultaneously reported that they would not encourage their children to pursue such training, but would encourage the pursuit of a university education. Sons and daughters reflected this parental outlook.

At the level of government, there is a different awareness -initially at the Federal level, because of the national governments' constitutional responsibility for economic welfare and social equity. As the power of economic change since 1960 was felt locally, provincial governments have been forced into various, but increasing, levels of support for vocational/technical training and education. This has been mostly at the post secondary and adult levels, through community colleges and technical institutes.

In developing vocational training, the foresight and planning has been that of the Government of Canada, complete with the development of national industrial sectoral councils, national occupational standards, and national labour market training strategies. This initiative has been followed and reflected by the provincial governments.

Federal initiatives include the intent to provide firms with funds for purchasing training from either public (colleges, technical institutes) or private vocational training institutions. However, the colleges and technical institutes continue to receive base funding directly from each of the respective provincial governments, funding which is a `blend' of provincial tax funds and federal tax funds transferred to the provinces under the Established Programs Financing Act of 1976.

The heightened attention of the Federal and Provincial governments, if not the mass of ordinary people, is based on two visions of technical-vocational education.

One is based in human capital assumptions, and is driven by concerns over economic performance. Generally, there is concern over:

a. losing market share in traditional and developing export markets.

b. slower adoption of new technologies than "peer" nations.

c. relatively low research and development activity in industry.

d. low level of enterprise based training.

e. high rate of public education expenditure; much concern over results.

f. high student drop out rates.

g. labour market problems because of inadequate basic skills of adults.

These concerns could be said to reflect the research interests of the OECD and its members. The assumption is simply that more effective and pervasive training would have a beneficial effect on these conditions.

The other image of technical-vocational education is that it is a means of achieving social equity, by enabling traditionally disadvantaged groups to enter, and obtain a larger share of the economy. This could be said to represent the UNESCO interest in the field. The assumption is that through opportunity for training, and as necessary, special training, deprived groups and individuals will be more mobile and economically productive. Correspondingly, they will gain enhanced social and economic status.

Federal and provincial governments have tended to oscillate between these approaches, while espousing both values simultaneously. The Federally sponsored Canadian Jobs Strategy of the late 1980s, focused on deprived groups, including aboriginal populations, women, rural populations, and the physically and emotionally disabled. Currently, the Federal Labour Force Development Strategy is following an industrial efficiency approach, with an emphasis on government, labour, and industry cooperating on standards and enhanced workplace training, with government financial assistance.

2. The Role, Function and Participatory Mechanism of Entrprises in Technical and Vocational Education

Only about one quarter of Canadian firms offer formal skills training to their employees. National and regional labour force efforts are being applied to increase the provision of such training by both large and small firms.

In recent years, Canada's vocational training systems have emphasized a stronger role for business and industry in defining training needs, and in providing training through government training purchases. The federal government in particular has established a strategy of labour market development based on increased private sector involvement. Expanded mechanisms for private sector input and direct involvement extend the degree to which industry training priorities drive the Canadian system of vocational and technical education and employment development.

More funds are being made available by the Federal government directly to firms, labour organizations and industrial associations to investigate their training needs, plan and design educative interventions, and design new training and adjustment initiatives.

It should be noted that recent federal initiatives, notably the Labour Force Development Strategy, have featured a much greater role for the private sector in training matters. Under the management of the Canadian Labour Market Productivity Centre (CLMPC), the federal government asked the private sector (business, labour, and social action groups) to indicate the kind of training programs the sector wanted. The Canadian Labour Force Development Board has been established to provide ongoing advice and guidance in the implementation of training programs. Progress is being made to establish provincial and local private sector boards to provide similar guidance and direction to local labour market programming.

Provincial and institutional vocational efforts also focus increasingly on employer-sponsored training, small business and community based training, new strategies for training people on social assistance, and special incentives for industry training for persons with disabilities, women and other disadvantaged groups.

These measures reflect in part efforts by vocational and technical institutions to dispel traditional skepticism on the part of business and industry that institutional training programs do not reflect the realities and needs of the marketplace. Institutions now work much more closely with business and industry to achieve a balance between narrowly defined sectoral training interests, and the broader community and continuing education mandate of the institutions.

There are many positive manifestations of industry-education interface reflected in active partnerships and joint ventures. Business and labour representatives participate on institutional boards and advisory committees. Industry-education cooperation is also seen in apprenticeship, cooperative education and school-to-work programs.

The industry-education interface is a symbiotic one. Both employers and schools sought each other out more frequently in the 1980s. Institutions are trying to be more responsive (partly because of government incentives) and value industry input and resources for vocational technical training. One of the motivations for more collaboration with industry among public institution providers is to minimize the need for new, specialized equipment or facilities by providing students with exposure to industry equipment and facilities through cooperative education and work experience programs.

Employers are increasingly concerned about recruiting quality graduates and about retraining for their workforce. For all stakeholders-governments, industry, institutions and others--"partnerships" has become synonymous with industry-education collaboration. Many industries are using vocational institutions for retraining workers; not just for initial training. Examples include the Canadian Transportation Institute, the Industrial Electrical Programmable Controller Project in Newfoundland, and the Customized On-Site Resource Training Services in New Brunswick. The Association of Canadian Community Colleges has instituted a "Partnership Awards" program for innovative partnerships among colleges, industry (business and labour), and community organizations.

The growing interest in and the need for change in the industry-education interface are reflected in the growth in secondary and post-secondary work experience and cooperative education programs; in college contract training for industries; and in school-to-work transition programs in the schools. Each of these involve strong linkages with local and national employers and employer groups. Approximately 140,000 students are involved in cooperative education. The majority (70 per cent) are secondary school students. The tertiary students who make up the total attend 70 colleges and universities (Canadian Labour Market and Productivity Centre, 1990). Both federal and provincial governments provide funding for such programs.

Canadian technical/vocational institutions increasingly join with industry in technology transfer and applied research activities. This has increased as more institutions have offered programs for training technicians and technologists. The technology transfer process has strengthened the interdependent relationship between industry and colleges in many local regions. However, some critics believe that resources dedicated to technology transfer and applied research detract from those directed to education and the primacy of teaching in colleges and institutes. They are also philosophically concerned about close ties between industrial demand and educational provision. Conversely, many technical educators believe industrial involvement enhances student learning and facilitates faculty updating. The Association of Canadian Community Colleges has advocated the concept of a Canadian Technical Assistance Program to fund colleges for applied research projects in conjunction with companies, universities, labs, and other research institutions.

While most provincial governments are encouraging stronger linkages between the private and public vocational institutions, the federal government has developed the most extensive and highest profile initiative with its Labour Force Development Strategy (LFDS). A major thrust of the LFDS is to promote greater private sector involvement in labour market and vocational training, including decision-making on priority-setting, funding and setting national targets and standards (Employment and Immigration Canada, 1989). It provides funding for training young people, workers, unemployed persons and members of special labour force groups. These dollars are intended to stimulate industry-education partnerships. Yet, while the federal government promotes this as an opportunity for public institutions to be more responsive to industry needs, institutions are concerned about the reduced "guaranteed" purchases of training by the federal government.

Another positive example of industry-education collaboration occurred in Quebec in 1986. After a series of consultations with industries, the provincial government issued a plan of action, *La formation professionelle au secondaire*, which precipitated a five-year program to revise and restructure vocational education at the secondary level. By 1987, the initiative led to studies on 19 sectors vocational needs and opportunities for industry involvement in local vocational education (Government of Quebec, 1990).

With the increasing involvement of industry in public vocational/technical education (e.g. advisory committees, partnerships, etc.), an important question is the degree of involvement and control over curriculum and funding by business, labour and professional organizations.

3. Sources of Funds and Teaching Staffs Concerning Technical and Vocational Education

3.1Funding

Canada has enjoyed a positive reputation for its overall support for education. This has been reflected in OECD statistics and reviews, and international studies such as *The World Competitiveness Report*, published each year. In 1990, Canada was ranked fifth, only behind Japan, Switzerland, the U.S. and Germany on the "World Competitiveness Scoreboard." Canada rated an even more impressive third on the "Human Resources" competitiveness factor. This was based on having high per capita expenditure on public education and high participation rates in secondary and post-secondary education. The overall ratings masked a low ranking for Canada in adequacy of its vocational training. However, the latter is based on perceptions of business leaders in their respective countries, while the secondary and higher education ratings are based on actual expenditure and enrollment figures (IMEDE and World Economic Forum, 1991).

The following summary of trends does not include statistics on secondary school vocational education. Enrollment, funding and other data pertaining specifically to such education is not separated out from national educational statistics.

Overall expenditures on education in constant dollars have increased by almost 75 percent over the last two decades. However, over the same period, education spending as a percentage of gross domestic product (GDP) decreased from 8.3 percent to 6.8 percent (Statistics Canada, 1978; 1983; 1989b; 1989c).

In this context, the Canadian expenditures on community college and vocational training programs increased over the same period, both in absolute terms and as a share of GDP. Expenditures on these types of programs also increased as a percentage of total education expenditures: Community college programs from 5.2 percent to 8.2 percent of total expenditures; and vocational training from 5.9 percent to 8.1 percent. This reflects both the growth of the college system in the 1970s in Canada, as well as increased emphasis on occupational training.

While provincial governments have increased expenditures on college programs significantly over the last two decades, the federal government has focused more of its direct support on vocational training in industry. Both have leveled off in the late 1980s.

A significant portion of the community college and vocational training funds are represented in Employment and Immigration Canada's training purchases. In constant dollars, these decreased by 22 percent from 1976/77 to 1987/88. There was an increase in federal purchases during the 1980s recession. However, it is worth noting that in constant dollars, the federal spending in 1984/85 was lower than in 1976/77.

3.2 Sources of Teachers and their Training

There is no Canada-wide standard for instructors in the technical and vocational education system.

In the secondary school system, teachers of technical and vocational programs are generally certified teachers with some type of specialized training in their field. In some provinces, university education departments offer degrees in industrial or vocational education, which teachers are required to complete.

However, there are many cases where certified teachers with a background in vocational training are not available. Under these circumstances, official permission from the school board or department of education may be given, if the teacher has trade certification or is highly specialized in the field of instruction.

Required qualifications for vocational instructors in postsecondary institutions vary depending on the institution and the area of instruction. Specific preparation in vocational guidance is not mandatory for employment in vocational and technical educational institutions. Required learning is usually obtained through inservice or provided through cooperation with counseling personnel.

Some community colleges require a certificate in Adult Education for all staff who don not have educational degrees. Instructors often have the option of attaining vocational educational certification from the colleges, or credit hours in a university program. In Ontario, hiring standards are established by specific vocational institutions.

Throughout the technical and vocational educational systems in Canada, professionals from business and industry are involved to a high degree. Examples of the types of involvement such professionals have with the training system have been given in other sections of this report, but they can be summarized into these main types:

a. institutional training programs often hire instructors directly from business and industry to assist with design and delivery of programs.

b. professionals are contracted by institutions to provide in-services, seminars and skills upgrading for instructors.

c. industry and business representatives help institutions ensure that institutional instructors keep current with industry trends, through participation on boards and advisory committees.

d. professionals provide instruction and program advice through informal and formal secondment or exchange programs between the institutions and business and industry.

e. professionals accept invitations to be guest lecturers and provide seminars in many colleges and technical and vocational institutes.

There are a number of disparate programs available across the country to train technical teachers, and to help them meet the particular qualification requirements of the province in which they provide instruction.

For example, in Saskatchewan, the University of Regina has established a technical/vocational program within the faculty of Education. The program is specifically designed to teach training and administrative personnel for adult-oriented vocational and technical training programs. Certificate and degree programs are offered. In addition, faculty assist specific firms to develop in-house industrial training capabilities. Courses in the program cover areas such as: adult learning, program development, instructional approaches, student assessment, program evaluation. Participants are expected to have 5 years of work experience in their chosen field.

In Ontario, college faculty are encouraged to remain up to date in their fields through sabbatical arrangements, conference allowances, and similar programs. Also, various professional organizations provide continuing education programs.

In Manitoba, instructors are hired on technical qualifications and must complete the certificate in adult education. There are three mandatory credits: Introduction to Instruction; Subject Development; General Methods of Instruction. An additional three credits of electives are required. Ongoing professional development is encouraged. Instructors are evaluated twice annually and programs are evaluated by internal and external stakeholders every three years.

A number of other provinces have similar college and university degree, certificate and diploma programs in industrial education, adult education and vocational education.

Most colleges and institutes provide some orientation for instructors, who are expected to keep current in their field and to upgrade their skills. Some institutions have professional development funds and/or programs for instructors which are, in some cases, jointly administered by union and management.

4. Levels, System of Schooling and Management Concerning Technical and Vocational Education

The organization of vocational and technical education in Canada is largely shaped by educational infrastructure, institutions and legislative framework developed by each provincial government. Provinces provide operating grants to colleges and other institutions; and give powers to school trustees and boards to administer local schooling. Provinces share in national initiatives and decision-making through the Council of Ministers of Education, Canada. The federal government is not directly involved in education or training policy, but makes contributions to education and training through labour market programs, student loans, tax transfers, support of unemployment insurance recipients in training, and targeted training initiatives for disadvantaged (equity) groups:

Technical education in Canada is provided by a diverse mix of public, private and voluntary sector organizations; and funded mainly by federal, provincial and local governments. Provinces operate community colleges, vocational schools or centres, technical institutes, and specialized marine, agriculture and fine arts colleges. Most provinces also have well-developed systems of distance education. Business and labour are heavily involved in trades or apprenticeship training, particularly in construction and metal fabrication industries.

Canada's public expenditures on education have continually increased in absolute terms over the last two decades; but its education spending as a percentage of gross domestic product decreased slightly over the same period. However, spending on college and vocational training programs has increased as a percentage of total education spending. This reflects the rapid growth of the country's college system in the 1970s and increased emphasis on occupational training by all governments in Canada.

Community college vocational and technical program enrollment almost doubled over the last two decades, and female participation in them increased. Despite this growth, the proportion of women in full-time college career programs increased only slightly and remains especially low in engineering and science programs. Enrollments in pre-employment, pre-apprenticeship and apprenticeship programs declined in the 1980s, but are showing recent increases. Enrollment in federally sponsored institutional technical programs decreased significantly in the 1980s, mainly due to an increased emphasis on funding private sector training.

4.1 Federal Policy

During the 1970s, the Government of Canada pursued an active labour market policy, focusing on economic needs and the needs of unemployed workers. It provided support for apprenticeship and skills training, basic skill development, English language training, and industrial training. Much of its support was provided through purchases of training from public institutions within the terms of a series of federal-provincial training agreements.

In the early 1980s, the federal government undertook several reviews of its labour market and training policy, which concluded that there was a serious lack of labour market information; programs did not respond to regional needs; there was little emphasis on quality and accountability of programming; and there was too heavy an emphasis on institutional training. The National

Training Act of 1982 reflected a new federal direction, where support of training was directed to skill shortages; more industrial training support was provided to employers; basic skill development training had to be tied to skills training programs; and training support was extended from one to two-year long programs.

In 1985, the Canadian Jobs Strategy was introduced to streamline federal programming and direct it at assisting those most in need, particularly "equity" groups, young people, labour force re-entrants, and long-term unemployed. CJS also continued the federal government's goal of supporting more market-driven training programs, and less reliance on traditional institutional training. More recently, through its new Labour Force Development Strategy, the Government of Canada has reflected a much greater role for the private sector in federally supported training; and more emphasis on labour force adjustment, equity groups, and training of social assistance recipients and unemployment insurance recipients. It has brought dramatic changes in Unemployment Insurance policy, and has the stated intention of phasing out guaranteed federal purchases of training from public VOTEC institutions; and led to the creation of a Canadian Labour Force Development Board and planned local boards for implementation of federal training programs. In addition, it is funding sectoral councils of business, industry and labour, which research needs, plan curriculum, set standards, and promote industry based training across the country. A total of 42 such councils presently exist, or are coming into being.

4.2 Provincial Policy - Secondary Vocational Education

The secondary school system in Canada has undergone some noticeable shifts in emphasis over the past two decades, although the general structure of the system remains in place. In the 1960s, the curriculum was strongly streamed into academic and non-academic tracks; the former being considered far more prestigious and popular and clearly targeted at higher education bound students. The federal government introduced legislation and programs to shift its emphasis in order to address its concern over producing more blue collar workers needed at the time.

The 1970s reflected a reaction to the distinct separation of academic and vocational tracks in schools; and federal incentives for vocationalization in schools was dramatically reduced. A concern for equal opportunity for all students, demands for more student autonomy, and more progressive pedogological attitudes led to a wider variety of curriculum options and eventually elimination of standardized exams.

The resulting "cafeteria" model has come under increasing criticism and has been modified. Economic pressures and concerns have led to demand for schools to better prepare students for work. In the 1980s, this led to calls to increase requirements for high school graduation; to reinstitute a system of provincial examinations; and to stream students more clearly into distinct and laddered programs. Provinces have subsequently increased the number of compulsory subjects for secondary school diplomas.

The 1980s also saw an increased concern over high school dropouts. While this phenomenon is difficult to measure, it is a significant problem. A landmark Ontario study led to a call for a less streamed, but increasingly "back to basics" curriculum for all students. Subsequent Canadian reports have called for a variety of paths to graduation and more connections between high school programs and the world of work. Provincial governments have moved to strengthen secondary career preparation programs, work experience and co-operative programs, and linkages between high school and apprenticeship programs.

4.3 Provincial Policy Post-Secondary Vocational/Technical Education

During the last two decades, provincial governments have increasingly attempted to balance the goals of a strong base of general education, relevant and transferable occupational skills, remedial education for undereducated citizens, and equitable access for women, members of visible minorities, aboriginal people, and people with disabilities. Recent provincial policy reviews have emphasized the strategic relationship between education and economic and social development. They emphasize the need for industry-education initiatives, workplace training, special initiatives for priority disadvantaged labour force groups, enhancing access to training and providing for more community input into decision-making.

There have also been many significant reforms in the delivery of education and training for adults in provincial education systems. There has been increased emphasis on basic, generic competencies; new delivery methodologies, including competency-based education; the application of more sophisticated education technologies, particularly computer and telecommunications applications; models linking school and work and theory and practice; efforts to increase the access to training among part-time learners, people in remote communities, and equity labour force groups; providing incentives for VOTEC providers to update instructors, curriculum and equipment, and generally increase institutional responsiveness to community needs. Several provinces have developed powerful distance learning systems - based on the British "open university" model.

4.4 Issues and Debates

The major issues and debates regarding post-secondary training in Canada revolve around governance and funding; equity and efficiency; curriculum; and quality. To varying degrees these issues are unresolved and are likely to remain a matter of political and economic trade-offs.

The governance and funding debate includes such issues as responsibility for funding; the role of the federal government in provincial programs and the efficacy of its programs; market driven training and its implication for public institutions; private versus public delivery of training; overlap and duplication among policy-makers and providers; and the role of the private sector in decision-making.

The equity-efficiency debate includes the fundamental question, to what degree should policy be used to redistribute training and income to underrepresented labour force groups versus a tool to address economic needs in Canada? This question is reflected in federal-provincial debate, access issues, steaming issues, regional distribution of opportunities; and its answer influences the direction of policy, delivery, curriculum and governance.

The curriculum debate is reflected in questions of balance between general and liberal education versus vocational/technical education; in the trade-off between streaming" and "cafeteria" models of secondary schooling; and in who should decide on the nature of curriculum. Curriculum issues rarely attract public attention, yet how they are addressed radically shape the experiences and outcomes of children and adults and the degree to which they become lifelong learners and competent citizens and workers.

In the 1990s, quality had become a central educational issue in Canada. This is reflected at the secondary level in debates on standardized examinations; strengthened core curriculum in elementary schools; increasing academic standards; reducing drop out rates; and accountability issues. At the post-secondary level, the quality debate revolves around institutional accountability and responsiveness; relevance of skills; national training standards; quality of government training programs; and setting national output targets.

THE PRESENT SITUATION AND THE FUTURE PROSPECTS OF CHINA'S VOCATIONAL AND TECHNICAL EDUCATION

by
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Starting from the end of the 70s, China began to pursue the reform and open policy, giving first priority to the drive for modernization and striving for a gradual transition towards a socialist market economy. But China is a developing country with a large population, and its labor force is low in quality. This made our modernization effort very difficult. Therefore, in order to produce laborers suited for the needs of the market economy, and turn our population burden into huge high-quality human resources, the Chinese government has taken various measures to develop vigorously vocational and technical education. And remarkable achievements have been made.

1. The Basic Picture of China's Vocational and Technical Education Today

Vocational and technical education in its modern sense started in China in the mid-19th century. But it developed very slowly. By 1949, when the People's Republic was founded, there were only 1174 such schools nationally, with an enrollment of 230,000. After the founding of the People's Republic, China launched a large-scale economic construction. In response to that, vocational and technical education also experienced a reasonably big development. Especially starting from the 1980s, China readjusted the structure of secondary school education, and as a result, vocational and technical education developed very rapidly. By the end of 1992, the number of various types of vocational and technical schools for both pre- and post-employment training had increased to 309,436, with a total enrollment of 47,920,000.

1.1 China's vocational and technical education exists at different-levels: the advanced, the intermediate and the elementary, with the intermediate level as the mainstay in school education. Secondary(or intermediate) vocational and technical schools consist of three types: secondary specialized schools, skilled workers' schools, and vocational and technical senior high schools. They mainly provide pre-employment education for young people, but they also provide on-the-job training for employees or short-term training courses for people just before they are employed. By the end of 1992, the number of these schools totalled 3903, 4392 and 8267 respectively and their enrollment reached 2,410,000, 1,560,000, and 2,860,000 respectively. The enrollment in all these schools accounted for 50% of the national total of senior high school students, and their annual enrollment was 54% of the national total. Vocational and technical schools at other levels include: 99 regional vocational and technical universities and colleges set up mainly by the major cities in various provinces, and 15 institutions of higher learning for training teachers of secondary vocational and technical schools, with an enrollment of 60,000 and 10,000 respectively; 1593 vocational and technical junior highs which provide elementary or short-term vocational training, with students totalling 560,000, and over 2000 job-training centers which offer training to about 1 million people annually; the general primary and secondary schools also offer skill training or help in job preparation to several million every year. On top of all these, there are altogether 290,086 adult colleges, adult secondary specialized schools and adult vocational and technical schools, with a total of 40,130,000 students.

1.2 The vocational and technical education in rural areas is particularly important. China is a major country of agriculture. Agriculture is the very foundation of the national economy. And 80% of the nation's entire population is in the countryside. The speed and level of rural modernization in our country determines the speed and level of modernization for the whole country. Therefore, the Chinese government has been actively advocating comprehensive reform in rural education. It has adopted the "ESA" "3-E" policies, the former means that education, science and agriculture should develop side by side; they should be closely linked to one another to form a joint force; and the latter means that in rural areas, general education, vocational and technical education, and adult education should be planned and arranged as a whole so as to achieve a well-balanced development for all three. The State Education Commission has also implemented the "Prairie Fire Program" in order to carry out educational reforms in rural areas, publicize and popularize the experience of reform models, develop rural education, improve the general quality of the whole labor force in rural areas, and to promote rural economic development and social progress.

1.3 China's vocational and technical education is run according to the following principles: The central government provides a unified leadership, local government makes overall planning or arrangements, enterprises, specific departments, as well as the society in general actively participate, and the schools enjoy full autonomy. The State Education Commission takes up the responsibility to formulate general principles and policies, plan for the development of vocational and technical education, coordinate all the efforts of related departments or sectors, organize and guide the reform in vocational and technical education. The central government, along with local government departments of finance and labor will be jointly responsible for personnel demand forecast, fund raising, job-assignment for graduates and management of vocational and technical education. The local governments have full power for overall planning and decision-making over the development of local-run vocational and technical education. The departments for various departments not only run well their vocational and technical schools, but also provide guidance, inspection and appraisal to vocational and technical education in their specific professions. Enterprise and organizations as well as different sectors of society also participate by providing fund, teachers, and information about demand for skilled personnel. The schools enjoy full autonomy in deciding course offering, size of enrollment, teaching and management.

2. Policies and Measures for Developing Vocational and Technical Education

2.1 To bring the role of governments at all levels into full play.

2.1.1 Formulating policies, laws and regulations, and development programs for vocational and technical education. Governments at all levels have made it an integral part of the overall plan for economic and social development, clearly defined the responsibilities of related officials, and included vocational and technical education in their performance evaluation. They have also formulated policies, and laws and regulations, clarifying the obligations or duties and the rights and benefits of various sectors and departments involved in vocational and technical education. As early as in 1985, the Central Government laid down the principle of training preceding employment and in 1991 on Vigorously on Developing Vocational and Technical Education was promulgated by the State Council". During the same period, local governments and People's Congresses had similarly formulated regional policies, laws and regulations in accordance with local conditions. All of these have guaranteed and promoted the development of vocational and technical education.

2.1.2 Making overall planning and arrangement in coordination with various sectors of the society so as to bring their initiative into full play. From the Central Government to most of the local governments, leading groups or coordination committees for vocational and technical education have been formed, with the heads of all related departments taking part. Together, they have discussed and resolved, in close coordination, difficulties and problems arising in the development of vocational and technical education. They have particularly coordinated among personnel, educational, and testing and evaluation departments so as to make sure that the vocational and technical education can satisfy the needs of the economic and social development in scope, specifications and quality, and to make sure to the best of their ability that graduates of vocational and technical schools can all find jobs.

2.1.3 Providing necessary funds for the development of vocational and technical education

2.1.4 To give free rein to all social sectors in undertaking vocational and technical education or in raising funds for it through various channels.

In view of the specific conditions in China and the characteristics of vocational and technical education, it should not be an important duty just for the government. It should enlist the help and support of every social sector and every individual. Different lines and various enterprises and institutions should run schools either jointly or separately; Democratic Parties, social organizations and individual citizens should be encouraged to do the same; donations from overseas are welcome. And TV, radio, correspondence and other forms of distance vocational and technical education should be given every support. At present, secondary specialized schools in China are mainly run by various trades and professions; skilled workers' schools, mainly by enterprises; and vocational and technical schools mainly by the joint efforts of government educational departments and others. This policy of drawing in all possible support has greatly helped us to resolve the problems and difficulties which have cropped up in the course of the development of vocational and technical education such as the shortage of funds, the lack of teachers and the difficulty in providing jobs for graduates. With regard to the funding problem, today, apart from government investment, trades and enterprises have also made their contributions. Meanwhile, vocational and technical schools have raised loans or received donations or accumulated capital through the operations of their school-run enterprises.

2.2 To gear vocational and technical education to economy

To meet the needs of the development of local economy is the starting point of vocational and technical education. This applies to the location of the schools, the offering of specialties and the teaching content. There are two ways of integrating vocational and technical education with the local economic development: a. Together with trades and enterprises, participate in the local economic construction by providing personnel, technologies and information. This is especially the case in rural areas, where vocational and technical education is an integral part of the whole project to develop agriculture by means of science and technology. In rural areas, vocational and technical schools have served multiple-purposes. They train skilled personnel, conduct scientific experiments, publicize techniques and technologies, set up production models, undertake business operations and offer services. And through these activities they have helped peasants directly to shake off poverty. b. Set up fieldwork bases and school-run enterprises. This is an important way to develop the students' ability to use their hands, and to adjust to changed conditions. Meanwhile, the central government permits schools to use school farms and enterprises for commercial production and operation so that they can take full advantage of their superiority in technology and personnel, thus achieving the dual purposes of both providing trained personnel and strengthening their ability for self-development so that vocational and technical education and the local economy may support and promote each other in a benign circle

2.3 To improve the vocational and technical educational system, and establish a network of vocational and technical education and short-term training so as to make it function as a whole. Begin with experiments on advanced vocational and technical education immediately. Incorporate an element of vocational and technical education in the elementary education, and let urban primary and middle schools add a labor skill class to their curricula; In the countryside, implement the early integration of elementary education with vocational and technical education, develop 4-year junior high schools (3 years' general education and 1 year's vocational and technical education), or similar "3+1" classes so as to give some vocational and technical training to those junior high graduates who are unable to continue their education. Establish connections between schools and the society, as well as among vocational and technical schools of various types and at different levels in accordance with local conditions so as to form a network of vocational and technical education and short-term training. In China today we have agricultural universities and colleges at the provincial level, agricultural secondary specialized schools at the prefectural level, at least one comprehensive key vocational and technical school at the county level, and peasants' literacy and technical schools in villages, thus forming a preliminary series of agricultural and rural vocational and technical education. In the meantime, we have adopted a system in which county-level comprehensive key vocational and technical schools are linked with some institutions of higher learning, secondary specialized schools or scientific research institutes; the schools learn advanced and new technologies and information from them; establish connection with local agricultural scientific and technological institutions for mutual assistance, and then transfer information and technology to all local rural primary and middle schools, village peasant literacy and technical schools, rural technical advice stations as well as individual peasant families, thus raising the overall quality and effect of rural vocational and technical education.

2.4 To bring the enthusiasm and initiative of the support and service of vocational and technical education into full play. Establish teacher-training bases with the help of universities and vocational and technical normal colleges; strengthen cooperations with research institutes on vocational and technical education, social organizations as well as other non-governmental institutions; and make full use of films, TV and publications.

2.5 To develop international exchange and cooperation. China's vocational and technical education has been relatively a recent development. We have not had much experience. Therefore, we place great emphasis on the exchange and cooperation with other countries. We have also established fruitful cooperation with UNESCO and the World Bank, which has enabled us to visit scores of countries , and to send some of our teachers overseas for further studies. We have already learned a lot from the experiences of advanced countries in vocational and technical education, and we will continue to do so. Right now, we are going ahead with experiments on advanced school models and teaching methodology such as " the dual system", "the communal college" and CBE, all of which have had very positive effect on the development of our vocational and technical education.

3. Future Prospects

In over a decade since the adoption of the reform and open policy, much has been achieved in vocational and technical education in China. But on the whole, this education is still on a relatively low level, and is still inadequate for the needs of our modernization effort. And there are still many problems and difficulties. Not long ago, the Chinese government issued the "Outline for the Reform and Development of Education in China" in which the goal by the end of this century and the measures to achieve the goal in the development of vocational and technical education were laid out .

In the remaining few years of the 90s, we will continue to go all out in developing vocational and technical education so that we can gradually provide vocational and technical training required or suited for various jobs to most of our new employees, and provide systematic and strict training for jobs that require highly specialized skills or techniques. Advanced vocational and technical education must witness a greater development. The enrollment in secondary vocational and technical schools should increase to 60% of the total of senior secondary school students. Short-term training programs for trade certificate in cities, and "green" certificate in the countryside should be greatly enhanced. The vocational training and career education factor and guidance within the elementary education should be stressed, and the mode of senior middle school education diversified so as to establish a system of vocational and technical education with Chinese characteristics, which is well-graded, well-structured, well-balanced, varied in form and well-coordinated with other kinds of education. More decision-making power should be given to schools. Our efforts should be concentrated on building a whole batch of multi-functional key vocational and technical schools and training centers. The law-making process on vocational and technical education should be speeded up, and the obligations, rights and benefits of enterprises, lines and communities in running schools should be further defined. Strengthen the support and service system for vocational and technical education, and develop further international exchange and cooperation in this field. Through all these efforts and policies, we hope that we will succeed in taking our vocational and technical education to a new and higher plane.

TECHNICAL EDUCATION AND VOCATIONAL TRAINING IN EGYPT

by
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1. Introduction

Over the past forty years, Egypt has placed a high priority on human resources development and made considerable progress in building up a national education and training system to provide its economy with a well-trained labour force. Technical education has played an important role in the system providing training for engineers, technicians and skilled workers.

2. Education System in Egypt

As stipulated by the law of education, the duration of pre-university education extends over eleven school years, as of age six to age 17. It comprises the following:

a. eight years of compulsory basic education, and this consists of two tiers: "The primary tier" of 5 years' duration, and "the preparatory tier" of 3 years' duration.

b. Three years of secondary education (general and technical).

c. Five years of advanced technical education.

The educational ladder is preceded by kindergarten. This is an independent educational stage of two years' duration, as of age four to age six. This stage of education aims at the global development of pre-school children and preparing them to join the basic education stage.

2.1 Basic Education: is a right of all Egyptian children reaching the age of six. The state is committed to provide it for them, and parents are committed to abide by it for a period of eight years. An examination of two sessions is held at the end of compulsory basic education. Successful students are awarded the basic education completion certificate. Those who complete the primary tier of basic education, and show vocational interests can complete the compulsion period in vocational training centres or schools, or vocational preparatory classes. Those who complete study in these centres or schools are awarded a certificate in vocational basic education, and are entitled to join industrial or agricultural secondary education.

2.2 General Secondary Education: Study in this type of education is general for all first and second grade students, and elective, specialized for third grade students. At the end of grade three, a general, one session examination is held, and those who pass it are awarded the general secondary education completion certificate.

2.3 Technical Secondary Education: There are three types of technical schools:

a. Industrial schools
b. Agricultural schools
c. Commercial schools

Study in technical education is provided at two levels:

a. Level of qualifying the skilled labourer class in three-year system technical secondary schools.

b. Level of qualifying trained technical labour class in five-year system technical secondary schools.

A general examination of two sessions is held at the end of the third grade of technical secondary education. Successful candidates are awarded "the three year-system technical school diploma", and the type of specialization is stated. Another examination is held at the end of the fifth grade, and the successful candidates are awarded "the five year-system technical school diploma". The type of specialization is also stated in this certificate.

2.4 University and Higher Education

This education is pursued in universities and specialized higher institutes. Admission is given to students who option the general secondary school certificate, and to those who complete the technical secondary education with high scores. The duration of study ranges from two years in intermediate technical institutes to four or five years in university faculties and higher institutes.

Education Structure in the Arab Republic of Egypt

Statistics on Pre-university Education for the School year 1992/1993

Stage of Education	Schools & Divisions	Classes	Students
Pre-	1335	6166	235733
Primary(nursery)	15647	155521	6791128
Primary	6012	80043	3344246
Preparatory	1295	18590	727690
General Secondary	469	18793	675687
Industrial	108	4469	165458
Agricultural	774	16403	623691
Commercial	56	103	2664
Teacher Training	268	1741	16297
Special Education	253	603	18572
One-class schools			
Gross Total	26217	302432	12601166

Statistics of Technical Education for the School year 1992/1993

Type of Education	Schools & Divisions	Classes	Students
Industrial			
3 years	364	17367	633424
Vocational	83	377	11242
5 years	22	1049	31021
Total Industrial	469	18793	675687
Agricultural			
3 years	86	4330	161829
Vocational	20	76	2196
5 years	2	63	1433
Total Agricultural	108	4469	165458
Commercial			
3 years	746	15920	608020
5 years	28	487	15671
Total Commercial	774	16403	623691
Total Technical Education	1351	39665	1464836

2.5 National Development Objectives and Strategies

The Government has approved the third five-year plan covering the period 1992-1996 representing phase III of the long-term plan (1982-2002). In the two earlier cycles, the aim was to rehabilitate the productive base, upgrade the commodity and service sectors and build the infrastructure of the economy. The third plan reflects a turning point in Egypt's development process through its emphasis on a systemic shift to a market-oriented economy. Specifically, it presents a multipurpose strategy for adjusting the public sector towards more autonomy and greater accountability through privatization, encouragement of greater involvement of the private sector in economic activities and reduction of state controls and regulations.

The third Five-year plan is not simply a series of projects but a framework for policy development and for the implementation of the country's economic reform programme. Some areas under the plan have been given priority, including scientific research and development; agriculture and industry particularly the development of production, goods and services; mother and child welfare; improving the educational process; youth rehabilitation and environmental protection. Specific targets of the plan are to reduce unemployment, enhance the participatory process, increase savings, improve social security and encourage entrepreneurship.

2.6 Objectives and Strategy for Education

The objectives and strategy for education are set out in the third Five-year plan (1992/93 to 1996/97).

2.7 The basic aims are:

2.7.1 Continue increasing access to basic education by providing more school places.

2.7.2 Improve the learning environment of the schools by improving school maintenance, reducing overcrowding and multiple shifts, and making better use of existing facilities.

2.7.3 Improving Educational Quality

This will be addressed through curriculum development, improvements in the development and production of school books, promoting teaching methods, widening the curriculum to cover more sport, culture, art...etc., meeting the needs of special groups such as gifted and the handicapped, better evaluation of performance, and examination reform.

2.7.4 Expanding and Upgrading Technical Education

The aim is to reach an enrollment rate of 70% of secondary admissions, and to relate the course contents more closely to the needs of the labour market.

2.7.5 Improving Teaching Resources

This is to be achieved by increasing the quality and quantity of teaching staff through the provision of more effective pre-service and in-service teacher training, performance related-pay and improvements in the technical standards of supervisors and the inspectorate.

2.7.6 Improving Education Administration

The emphasis here is on improving the capacities of, and cooperation between, the various technical bodies and institutions.

3. The Technical Education Development Strategy

This strategy includes:

a. The strengthening of engineering education through the introduction of application-oriented courses in institutions other than the more traditional engineering faculties in Egyptian universities.

b. The strengthening of training technical and engineering support personnel at the technician level in special post-secondary training institutions, including fields of up-to-date technology.

c. The expansion and modernization of industrial education at the secondary level, through the establishment of new schools and through improving the equipment situation in existing schools.

d. The introduction of new specializations in industrial secondary schools to cover training in modern technological fields, and the construction of new schools for this purpose to serve as centres of excellence for the system of industrial secondary education.

e. The expansion and modernization of technical teacher training comprising both pre-employment training, and upgrading training for existing teaching staff.

4. Industrial Education

Egypt has made immense strides in developing a national education and training system for producing the skilled manpower required by her growing industries. Although the system includes a large number of ministries and organizations dedicated to producing skilled manpower for particular concerns and specific industries, the main responsibility for technical education rests with the ministry of education.

The ministry of education was careful to develop industrial education in such a way as to cope with needs of the labour sector in terms of trained technical labour. To attain this goal, to link industrial education with productive work and environmental needs, certain steps were taken in the last years:

4.1 Training the Students in New Specializations to Cope with the Needs of the Labour Market.

The specialized subjects taught in the industrial school are:

a. The three-year industrial school

Mechanical

Mechanical production, mechanical fitting and installation, forming & welding, foundry, pattern, making fine mechanics, refrigeration and air-conditioning.

Marrine

Marine engineering, fishing & marine arts, shipbuilding, river transportation.

Vehicles

Automotive, tractors and agricultural machines.

Electrical

Electrical equipments, repair and maintenance, electronics, computer maintenance.

Architecture and building

Building and construction, general architecture, joinery, concrete work, sanitation and plumbing, stone carving.

Decorative

Cabinet making, wood carving, decoration, leather work, metal iron work, metal furniture, decorative, metalwork, beautician, printing.

Textiles

Spinning, weaving, knitting, ready made clothes.

Special industrial programmes

Iron and steel: machining, metal forming, pattern making, furnaces, steel, welding & sheet matal work, heating processes.

Medical aids: handicap aids, artificial limbs.

Railways: transportation, railway engineering, signals, rolling stock, diesel motors.

Printing: printing, mechanical copying, offset printing, plate preparation, bookbinding.

Electrical power: electrical power mechanics, fine equipment and instrumentation, electricity, electrical networks.

Miscellaneous: textiles & embroidery, mechanical weaving, mechanical textiles, artificial fibres, wool preparation, chemistry, plastics.

b. The five-year industrial school

Mechanical

Mechanical production, automobile engineering, diesel and heavy duty mechanics.

Electrical

Electrical engineering, electronics, radio & TV, refrigeration and air-conditioning.

Building & construction

Building & construction, sanitation & plumbing, joinery, plastering, concrete work, building engineering services.

Textiles

Spinning, weaving, knitting, textile preparation, ready-made clothes.

Decorative

Decoration & advertising, decorative metalwork, ironwork, sheet metalwork, jewelry.

Marine

Shipbuilding, marine engineering.

4.2 Developing the Curricula

A number of committees for developing industrial education curricula were formed from experts in the ministry, university professors and representatives of the production agencies, and institutions sectors benefiting from industrial school diploma holders. These committees were assigned the task of reviewing study curricula, the study course content and schoolbook selection. The new curricula featured flexibility so that they can keep pace with the continual scientific and technological development, and accommodate with environment conditions and society needs.

4.3 Link Industrial Education with Productive Work:

The ministry of education has succeeded in developing a number of special industry-linked schools and programs of two types: operation by the ministry of Education of special industrial schools dedicated wholly to training skilled manpower for a particular company, or organization by the ministry of Education of special classes in selected industrial schools at fulfilling the same requirements. Curricula in use in such programs are generally tailor-made to suit specific requirements; they can be appraised and modified on a continuing basis to respond to changing needs; some recent programs have instituted a common first year of study for groups or clusters of specializations; and some have even made much needed progress toward the integration of theoretical and practical subjects. The enterprises participate in the selection of students, assist in providing vocational guidance, provide work experience during school vacations, and usually employ the graduates.

4.4 Upgrading the Scientific and Vocational Level of the Industrial Education Teachers.

The theoretical technical subjects in industrial schools are taught by teachers graduated from:

a. Faculties of Education
b. Faculties of Engineering
c. Faculties of Applied Arts

Teachers who teach the practical subjects and train the students in the school workshops are graduated from the five-year industrial schools.

It was found that the existence of two different categories of teachers giving instructions based on independently developed curricula results in lack integration between theory and practice. This leads to an inadequate understanding of relevance and interrelationships between theory and practice.

So a new college for educating and training the industrial education teacher was established at Kobba in Cairo. This college prepares the industrial secondary school teacher, who is capable of teaching the theoretical aspect, as well as the practical aspect of technical subjects, by using modern educational techniques.

Another college will be established in BENT-SUEF in upper Egypt.

Besides, the Ministry of Education expands in holding training programmes for industrial education teacher, so as to upgrade their scientific and vocational level, and make them familiar with innovations in their fields of specialization.

4.5 Modernizing the Equipment

It is planned to update the apparatuses and equipment to keep pace with modern technological progress and to enable industrial schools to play their role as productional units.

5. Financing Education in Egypt:

The Government is responsible for the financing of all education which is free at all levels.

The Government bears the burden of Education in all public schools as of the first tier of basic education up to the end of higher education, bears it in general education schools, technical schools, special and specific education schools, intermediate technical schools, or university.

The private sector takes part in bearing the burden of education. This is fulfilled through the private schools which it owns.

The ministry incessantly calls upon capable citizens to partake in building schools through autonomous initiative; it encourages individual and collective initiative to partake in financing education within the context of the plan, and educational map of each governorate.

In the context of international co-operation some regional and international institutions contribute to financing certain educational projects.

Education Budget 1993/1994
and their percentage of total State Budget

Type	EL Mill.
Ministry of Education Ministry of Higher Education	4512.6 2071.7
Total Education Budget	6584.3
Total State Budget	60006.2
Percentage of the Total State Budget	10.97

Technical Education Budget 1993/1994
and their percentage of Total Ministry's Budget

Type	EL Mill.	Percentage
Industrial Education	694.22	15.38
Agricultural Education	170.14	3.77
Commercial Education	276.29	6.12
Total Tech. Ed. Budget	1140.65	25.27
Total Ministry's Budget	4512.6	-
Percentage of the Ministry's Budget		25.27

6. Management and Administration of Education:

Egypt national educational policy is made and decided at the central but implementation is the responsibility of regional (governorates) and local educational administrations.

The Higher council for pre-university education, presided over by the Minister of Education is responsible for designing policies for pre-university education. Its tasks also include the follow-up and evaluation of educational policy, textbook policy and the linkage between education and the Development plan.

Directorates of education has been created in all Governorates (26). They are responsible for establishing, equipping and managing the schools in their sector; for the supervision of the implementation of curricula; for studying the educational needs of the Governorate and suggesting the corresponding draft budgets and development plans, for the supervision and implementation of laws and regulations concerning education. Their responsibility also includes specifying school locations and making arrangements for expansion as well as licensing private schools, deciding their fees and the level of appropriate aid from public funds.

The Supreme council of Universities chaired by the Minister of Education is responsible for determining University education and scientific research policy, for the creation of new specializations, and for determining the number of students to be admitted annually to each Faculty. It has also set up committees for every sector of University education to cover all disciplines. Among its tasks is to determine, in conjunction with the authorities concerned in and outside the universities, the numbers of graduates needed in each field of specialization and to define required academic standards.

7. Vocational Training

In addition to the ministries of Education and higher Education other ministries offer training programmes. This is the case, for instance, of the Ministry of Health, which provides paramedical training, and of the Ministry of Industry, which provides vocational training of 2-3 years duration in training centers, specially geared towards Government entities or private industry. Workshop training is generally carried out in industry workshops.

TECHNICAL AND VOCATIONAL EDUCATION AND MODERNIZATION IN GERMANY

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Introduction

Germany's vocational system (including technical and vocational education) has been given considerable attention internationally in the past years in view of the vocational qualification and employment issues arising in many countries. International comparative studies have shown a relative low unemployment rate in Germany among young adults as compared with other similarly developed European countries. This fact has been primarily attributed to the main characteristics of the Dual System of vocational education - a system combining compulsory part-time education with on-the-job training. For this reason education researchers seem to find it all the more alarming that the number of unemployed between the ages of 20 and 25 who have completed vocational training has risen sharply in recent times.

Proceeding from this problem, my description of the role and function of technical and vocational education in Germany, the description of system and levels of schooling and management and my analysis of the participatory mechanism of enterprises in technical and vocational education include four aspects: The first section portrays the elements and operational mode of the technical and vocational training system. The description centres round this educational system's dualism, i.e. the interaction of on-the-job vocational and (in part) theoretical training that is obtained through part-time schools which generally operate through public funding. Technical and vocational training in full-time schools is a branch of the vocational training system that has grown considerably in significance in recent years. The relationship of these schools to the Dual System of on-the-job training and part-time vocational school is further discussed.

The second section portrays the Dual System's strong points, i.e. the combination of on-the-job and vocational school training. On the basis of empirical research findings and theoretical concepts the Dual System's positive effects are outlined. The Dual System's, when applied appropriately, can produce positive effects not only throughout the entire educational system, but also upon the possibilities of organizing employment within the occupational system. There are two main factors needed which allow the Dual System to function:

a. that firms train in the vocational areas for which there require junior employees;

b. and that there is a combination of vocational qualification and productive work within a firms trainee programme.

In the history of the Dual System, studies of these factors have only partially described this system's way of operating and in recent years other factors have become increasingly significant. These changes and as solutions to these problems, Concepts of Reform will be portrayed in section three. These Concepts of Reform have been discussed extensively since the beginning of the 1980s and some have been put into effect.

Despite, the approaching demise of the Dual System has often been forecast, the alleged cause being erosion from within and without. Some see the reason for demise as the system's inability to adapt to changed general conditions and demands from without; others are afraid that external Concepts of Reform will eventually lead to destruction of the basic operating mechanisms in the Dual System.

It is true that the vocational education system in Germany has gone through far-reaching changes, especially within the last ten years, because of various developments (e.g. new types of financing, alternative offerings, new learning sites, demographic developments) - discussed in section four - and educational-political intervention. The risks at hand are revealed, however, as starting points for reforms with prospects for the future.

1. The German System of Technical and Vocational Education:

1.1 Components and Mode of Operation

A country's education and training system, particularly its vocational training system, is largely determined by that country's sociocultural, economic and technological development. With their different structures, the vocational training systems in Europe and other industrial nations reflect these states' different historical backgrounds.

The German vocational education system can generally be divided into three central sub-systems:

a. the on-the-job vocational training firm,
b. the part-time vocational school,
c. the full-time vocational school.

On-the-job training, meaning firm-based vocational training, is the main method for young people to achieve preliminary vocational qualification. According to the regulations of the Vocational Training Act of 1969, vocational training is permitted to young people under age 18 in only one of over 300 recognised occupations requiring formal training. The expression "recognised occupation requiring formal training" suggests a large amount of uniformity, which in reality is not the case. The quality and length of vocational training varies greatly between individual occupation. Most occupations require vocational training for 3-3.5 years. However, there are quite a number of occupations requiring 2 years of vocational training.

The Vocational Training Act which regulate the content and duration of vocational training originated in the 1930s. However, since 1969 the training directives for the most important occupations requiring vocational training were revised in a complicated procedure. This procedure was carried out under the surveillance of the Federal Institute for Vocational Training which is part of the Federal Ministry of Education and Science. It is intended to reach an accord (principle of consensus) between the tariff parties involved (the employers associations and labour unions), the Federal Ministries concerned and the Education Ministries of the States, which are also responsible for vocational training. This is why the voting procedure is so complicated and time-consuming. Responsibility for the formal supervision of the vocational training process and authority for accepting intermediate and final examinations rest with the regional trade associations (i.e. Chamber of Industry and Commerce, Chamber of Crafts) which serve as regional head organisations for the various firms within their fields. The vocational training boards which have been established within these trade associations consist proportionally of members of employer and employee organisations and have a consultative function.

Training costs (e.g. personnel expenses, training measures, materials, trainee remuneration etc.) are borne by the training firm. Only in a few smaller enterprises there is a formally agreed regulation by which all training costs are divided between all firms within that branch of trade. The financing of individual firm's on-the-job programmes has been supplemented since about 1975 through a multitude of partly federal and partly individual state development programmes. These programmes allow for on-the-job vocational training to be subsidised under certain conditions i.e. on-the-job-training programmes in structurally weak regions, training programmes for young people with unfavorable school qualifications, training programmes for girls in technical trades.

Trainees sign a training contract with the firm, which regulates both the content and length of the training programme. Within the firms, the trainees have employee status and they are represented by a statutory organisation for representation of their interests. Trainees receive a trainee remuneration, which is generally fixed by agreements between trade unions and employers' associations. The amount of trainee remuneration differs substantially between the various trades. In some cases it is a kind of allowance, while in others the amount is enough for the trainee to live on.

Firm-based vocational training covers about 30 hours a week. Such training can be best described as on-the-job training in smaller firms and traditional enterprises. This allows trainees to start working productively at an early stage, so that work requirements should always be adapted to their growing skills. Then, towards the end of their training programme, they can be treated as (almost) full-scale employees and can be entrusted with tasks accordingly. On the other hand trainees are largely excluded from actual production in large training firms and instead are transferred to training workshops or training departments. This is due to the fact that, in this type of firm, operational procedures are easily interrupted and because of their complexity often overtax a trainee's learning capacity. Following this period of basic training in training workshops, trainees spend a period of weeks or months in various departments and working groups. Towards the end of this training period the trainees are given 'serious' tasks.

Complementary part-time vocational school has the task within the Dual System of supplementing firms job-specific practical training with the necessary specific theoretical material. Furthermore, emphasis is placed upon general education, especially the native language and politics. Attendance at part-time vocational school is mandatory for the entire duration of vocational training. Young people who take up a job as unskilled workers directly after school must attend vocational school on one day a week until they turn 19, unless they have already fulfilled their vocational schooling requirements during the course of vocational training in a full-time school.

Authority with regard to vocational school issues rests with the Ministry of Education and Cultural Affairs for the individual states. However, general teaching curricula for the scholastic part of vocational training are regulated uniformly for the entire Federal Republic of Germany through the voting procedure mentioned earlier. Responsibility for organising these part-time vocational schools for the most part falls to public-institutions. Vocational school costs are met by the individual states.

Within the Dualism of training firm and part-time vocational school, the vocational school is certainly the weaker partner. This is obvious from the fact that the amount of time spent in school is comparatively small and that school achievement records do not count towards the final examination. One permanent area of conflict between firms and vocational schools concerns the coordination of the timing and content of the training programme. Training firms (and often the trainees too) criticise the fact that vocational school classes often lack necessary reference to the firm's training requirements and that trade-specific theory is inadequately conveyed. Many large firms have decided to take actions and have established their own in-house theoretical schooling programmes within their training departments.

Vocational training in full-time schools is the third important component of the training system, and their design and functions are extremely manifold. With regard to the functions, two basic types can be listed:

a. establishments for vocational preparation,

b. schools in which basic vocational training can be obtained.

Establishments for basic vocational preparation offer courses generally lasting one year with the purpose of preparing participants to take up regular vocational training or to enter the labour market as unskilled workers. Basic vocational preparation usually conveys basic knowledge and skills which are useful in several fields or related trades. For this reason, the completion of a basic vocational preparation course is not shortened. These preparation courses are offered by vocational schools under different names in different states.

Vocational schools in which complete vocational training can be attained must be divided into three groups.

First of all, vocational schools train for occupations for which no on-the-job training exists. These are mainly occupations in the health care, child care and child-rearing areas -- jobs which are generally undertaken by woman.

There are also schools training for occupations in which on-the-job training is available; and these schools prepare students for the examinations issued by the respective trade associations. Along with these types of school, a growing number of training centers have been established which have a similar function. This new type of vocational school is not supported by the educational administration, but rather by the municipalities, welfare orgainisations and youth organisation. The main characteristic of this type of vocational qualification is that, even though it does not take place in firms, it is still supervised by the trade associations.

Finally, there are also full-time vocational schools that train young women for office jobs in two- to three-year programmes. Although students are not able to attain a certificate as a skilled employee, they are treated in the labour market on the same footing as those who completed an on-the-job office training programme.

How do these components of the vocational training system fit in to the educational system as a whole and what quantitative significance do they have?

After four or six years of comprehensive shoaling in the elementary schools, that is at the age of 11 or 13, pupils in Germany are channeled into three different branches of the secondary schools through various means of selection. The schools differ in duration, curricula and the quality of certificates that may be obtained.

Secondary education in the Hauptschule (the 'main' school) adds up to a total of nine or ten years of schooling which is the duration of compulsory full-time schooling (this varies between the states). The Hauptschule curriculum prepares primarily for vocational training in the crafts, industry and clerical jobs. The Hauptschule certificate has over the last few years become the minimum requirement for access to such training opportunities.

In the hierarchy of secondary schools the Gymnasium constitutes the highest level of general education. After a total of 13 years of schooling with a primarily college-preparatory type curriculum, graduates of the Gymnasium have nearly-exclusive access to higher education.

Between 1970 and 1990 there was a significant shift towards a higher number of school-leaving certificates of general education. The percentage of pupils leaving Hauptschule with or without a certificate dropped sharply (from 65% to 44%), while the percentage obtaining Realschule school-leaving certificates rose appreciably (from 26% to 34%), as did the percentage obtaining university-entrance certificates (from 16% to 20%).

2. The Strong Points of the Vocational System

Investigation of the interrelationship between the design of the educational system and the structure of the employment system has been the main theme of numerous surveys. They examined possible reasons for the rapid expansion of the general school system in a number of Western European countries in the 1960 and 1970s and attempted to discover connections between the general school system, the vocational training sector and the various forms of work organisation.

The structure of the relationship between the educational and employment system had been viewed as a complex interdependence, where the process of educational expansion is a roundabout in which the firms act as consumers of qualification, rather than initiators of this expansion, but at a later stage, merely intensify the pressure of expansion by reacting to the qualification structure previously by the educational system. The fact, that the pressure became effective in opening up general education opportunities in various western European countries at different points in time and with different strength is explained by pointing to the different economic and social circumstances and the different structures in educational system.

According to the surveys, the varying length of time required to build up the system of general education in different countries was due to the different strengths of the vocational qualification systems. In countries like Germany where vocational training did not appear to lead to a dead-end, because of a significant number of opportunities to ascend to positions like technician or graduate engineer, there was considerable less pressing demand for the expansion of general education schools. Within educational systems that do not provide opportunities for attaining qualifications for technical employment through on-the-job training immediate workforce, issues within the economy of the country then press for a build-up of general education opportunities, as it becomes obvious that only university-level training can provide the necessary technical-administrative qualifications.

In countries maintaining a system of high-standard practical job training qualifications, whose graduates can take up jobs in firm with relatively few problems, the firms themselves appear to have a more professional organisational structure. Here the organisation of operational and work procedures can be limited to arranging the necessary tasks for the production process in such a way that the resulting work can be done by persons with the customary job-specific qualifications (e.g. turner, toolmaker, draughtsman, chemical laboratory assistant). The firm can rely on these workers to carry out all aspects of their tasks according to the standards belonging to their trades. Tasks-planning, preparation and control are only interrupted by executive tasks and pulled together into special groups if disciplinary necessity arises or if it corresponds to the job-specific division of work.

This implies that in most cases a very limited horizontal and vertical division of labour exists, given the firm ample flexibility in the use of the qualifications within its workforce. This professional type of organisation basically corresponds to both the firms' and workers' interests. From a firms point of view, this type of organizational structure is the most effective type of work organisation, because it minimises the need for supervision. From the employee's point of view, this organisational structure conveniently checks vertical difference within the employment system and counteracts an increasing separation of brain and manual work. Professional organisation of work therefore is closely connected with an efficiently operating vocational education system in which - as in the Dual System - job specific theory and on-the-job experience are joined. This makes it possible for graduates to enter into a professional organised structure with little or no risk. In proportion as the expansion of the educational system has taken away applicants with good school qualifications from the vocational system, so the qualification structure of those just entering into the labour market increases and the number of those who have completed on-the-job training and could be employed in firms with far fewer problems decreases. In the end, both factors at some point make aware great changes within the specific qualification and hiring policies of firms, as well as in work organisation and the horizontal and vertical division of labour.

The lack of workers who have had sufficient on-the-job training causes firms to change their organisational structures from 'professional' to bureaucratic. The firms' bureaucratic organisational structure allows workers with limited knowledge and skills to be put directly to work in a productive manner, by giving them strictly controlled, pre-planed tasks. The hierarchy this brings forth ... secures the necessary control and the chance to awaken and reward interest in further job-specific qualification by opening up opportunities for promotion. It goes without saying that such a system can only operate with inequality of pay, working conditions, status, etc. ...

The extent to which firms react to expansion within the educational system by creating bureaucratic organisational structures is also the extent to which the interaction of the educational and employment systems has developed into a "vicious circle of merits". Since in the circumstances described only a university degree can protect one from being tied to a job that is subordinate, badly paid and under constant disciplinary control, the demand for higher education is bound to continue rising. In this development, qualifications obtained through vocational training acquire the status of training for those who have been handicapped by heredity and deficits in the social sector and who already have the stigma of inferiority of the educational system.

Germany is not drawn as far into this "vicious circle of merits" as other European countries but it is no wonder that the status of vocational education is low compared with the status of general education in all industrial societies, and even more in the development countries. It is certainly much easier to link the notion of disputy with the work of an academic than with that of an assembly line worker. And also industry has changed tremendously in this century, the superiority of general over vocational education in terms of respect accorded to it, has not been affected.

3. Concepts of Reform

Since the 1980s changes in work organisation, enforced by the imperatives of new technologies can be viewed which in turn required new capabilities. And also there is not yet a coherent description of the emerging work world, a few fragments of insight are now clear. The new model of production and labour is based on the notion of a systematic and integrated process. The nearest approximation is that production in the emerging world is no longer to be seen as a sequential process, so popularly reflected in the factory; rather, it is encompassing and simultaneous, with all facets working in conjunction with all other facets. Mature modern environments find themselves in the mids of a transition from a society in which mechanical technology has determined work organisation, to a society in which information and organic systems are beginning to determine work organisation. The old model mirrored work organisation similar to a clock mechanism, while the new model reflects more biological configurations, in which the whole is more than and different from the sum of its parts. The new perception is that the activities of the individual as a worker have dramatic consequences on the functioning of the entire system, which means that if workers are to be effective, they must understand the organisation of this whole and must know how to play an active role in it. Education and training for work under these conditions must know how to play an active role in it. Education and training for work under these conditions must start from a helicopter's and not from a worm's eye view.

A global perspective of the individual industrial enterprise is being accompanied by still another global development. Commercial markets are

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shifting from a local arena, and those companies that to survive in the globa competition of the 1990's are being required to mobilize the creative energies of their whole workforce.

If companies are going to achieve the continuous flow of improvements and innovation (big and little) which will be the touchstone of success in the European and world markets, they must give up some of their old ways and adapt to what Daniel Bell has described as the postindustrial society, and that others have labeled the information society. In this new society, industrial organisation will no longer be characterised so much by commodity production as it is by knowledge and information production and distribution. That is, post-industrial society is based on the production and distribution of knowledge and information rather than the production and distribution of material products.

These developments have enormous implications for the education and training system, which must attempt to respond continuously and positively. To be able to do this, the education and training system must face a similar process of transformation as the production systems. Unless this is done, the education and developments and, since it is not possible to forecast all of these developments, it will never be able to catch up. We know that it is impossible to standardise and systematise the teaching of occupational skills until a technology is sufficiently established. Traditional ways of adaptation to change are no longer adequate.

In order to change traditional structures, the goals of general and vocational education must be formulated in such a way as to participate in the change process, even to help shape the new perspective. We need to find the people who can "vision" the future contribution which an occupation can make to a business. Who could do better to sketch a vision of the future skilled worker or business clerk? Who could better formulate the requirements for the future front-line people in production and service than those who are not satisfied with the delivery of public education systems: undoubtedly the managers and trade unionists. Their cooperation under the heading "social dialogue" is highly valued in the European Charta of 1987. I shall provide a single example of how these two partners in the economy can play out their relationship in the field of vocational education and training:

In 1978 the German employers' organisation of the engineering industry and the metal workers' union negotiated new goals for the training of skilled workers in the engineering industry. Employers and trade unions were in agreement that the old system of job descriptions and certification requirements had become unhelpful against the background of the emerging new work organisation. They set out to establish and agreed a set of principles on which a new system would be based:

" The skilled worker should be able to:

a. use the acquired occupational competence in different enterprises and industries as well as in generically related skilled work, if necessary after acquiring additional skills;

b. position her/himself flexibly to new work structures, methods of production and technologies, with the aim maintaining occupational competence;

c. take part in continuing education and retraining in order to secure occupational competence and mobility".

These principles served as the foundation to guide an eight-year period of restructuring role descriptions and certification requirements for 37 engineering occupations that had previously existed in the Federal Republic for more than 40 years. This task was carried out by senior research personnel of the Federal Institute for Vocational Training in Berlin. In the process, the 37 engineering occupations were clustered into six new and more general engineering occupations, which were further divided into total of seventeen different occupational profiles. In other words, 37 occupations had been reduced to 17. The Federal Government took the formal step of issuing legal regulations for the revised system. The decisive distinction between the "old" and "new" training goal runs as follows:

"The skills and knowledge laid down in this binding regulation are to be mediated so that the learner is capable of qualified (skilled) occupational activity. This includes especially autonomous planning, execution and control.... The skills thus described are to be tested in an examination."

Under these new federal regulations, other curricula of the apprenticeship training programmes were also redefined. Previously, the training programme had been based on occupational profiles and contained a description of requisite KNOWLEDGE AND SKILLS, which were to be taught through vocational education and training. In the new framework, more general goals were added, related specifically to the above principles. For example, with regard to the metalwork process, the training programme not only included a more general educational orientation, but many training aims were directly related to the principles that had guided the whole deliberation process. These aims are often referred to as "key qualifications".

4. Problems of Vocational Education and Outlook

It is possible to characterise the 1980s as the decade in which efficiency, quality, customer service and customer satisfaction brought success to industries in advanced industrial countries. A committed, well educated and trained workforce formed a key element in the infrastructure of the most successful quality goods and services is a testimonial to its education and training system.

Most of the employers in Germany say their training system gives them a major competitive advantage over foreign rivals. Apprenticeships bring faster more flexible workers and increased long-term productivity. Trainees are not simply there to learn but also to work. This reduces costs, increases the trainee's motivation to learn, and allows the company to observe potential future employees. For the nation it means economic growth and increased competitiveness.

Despite the success of vocational education system in Germany, there are potential problems in the 1990s: birth control causes sharp drop of number of school leavers (40%) between 1985 and 1995. A great number of small and medium enterprises have to abandon company training because of shortage of young people. In addition, problems arise over the coordination between inplant training and vocational school. Coordination is supposed to be ongoing but vocational schools become out-of-date, and some suffer from a shortage of teachers.

On the other side there is an increasing number of companies which use their apprentices as poorly paid labour and neglect the training side of things, while the number of firms, offering a high qualified training, deminished. In recent months, for example, the recession in Germany's automotive, steel and machinery industries has begun spilling over into apprenticeship programmes. Fewer than half of the metal industry's 130,000 apprentices will be hired permanently by the companies that trained them this year. This cost-cutting jeopardizes the availability to qualified labour down the road.

These are some of the problems which will force government, employers and unions again to react with preventive measures to avoid the feared youth unemployment in those fields. Initiatives towards a general funding of vocational on-the-job training programmes which have usually been disregarded because of the objection that this would invalidate the tested market mechanism, are recently up to discussion. The purpose of a general levy on all firms is obviously to distribute training costs among them -including those with no training programmes, because they too profite from skilled workers. A sufficient number of vocational training placement opportunities of high quality would need to be assured. Therefore it will be important to build regulating mechanisms into a general funding programme that ensures it will induce forms to qualify their trainees in such a way that they will be valuable in the labour market now and in the future.

In the 1990s, those industries and countries will be successful which offer innovative goods and services coming up to a high quality customer's satisfaction. This implies a step change in our expectation of the contribution of the whole workforce. People will not only have to work "better" (total quality) but work "differently". To meet with these challenges they will have to be more highly educated as well as competent in their occupations.

Germany is trying to maintain its record of training a highly competent labour force under the new circumstances of global competition and challenges.

TECHNICAL AND VOCATIONAL EDUCATION AND MODERNIZATION

by
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Education is a matter of right for every individual in the society. It is the responsibility of each government to provide adequate facilities to promote education. Education has now become a life-long process. There is a diversity in education system throughout the world. The education which is not capable of providing occupation is no education. In most of the countries, large number of graduates in general education are not employable. In this context, "Technical and Vocational Education" is a comprehensive term referring to those aspects of the educational process involving in addition to general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life. Technical and vocational education is further understood to be:

a. an integral part of general education;
b. a means of preparing for an occupational field;
c. an aspect of continuing education.

The role of technical and vocational education should be recognized as a pre-requisite for sustaining the complex structure of modern civilization and economic and social development and its contribution to the maintenance of peace and friendly understanding between various nations.

Vocational education is a distinct stream intended to prepare students for identified occupations. Vocational courses are generally provided after ten years of schooling and in some cases eight years of schooling. Vocational courses are being provided at tertiary level of education to provide vertical mobility to the vocational school graduates and also through open learning.

Technical education is one of the most crucial components of Human Resources with great potential for adding value to products and services and for improving the quality of life of the people. Technical education includes education at Diploma level, first degree, second degree and doctoral programmes in engineering and technology. It also includes technicians education.

1. Modernization of Technical and Vocational Education

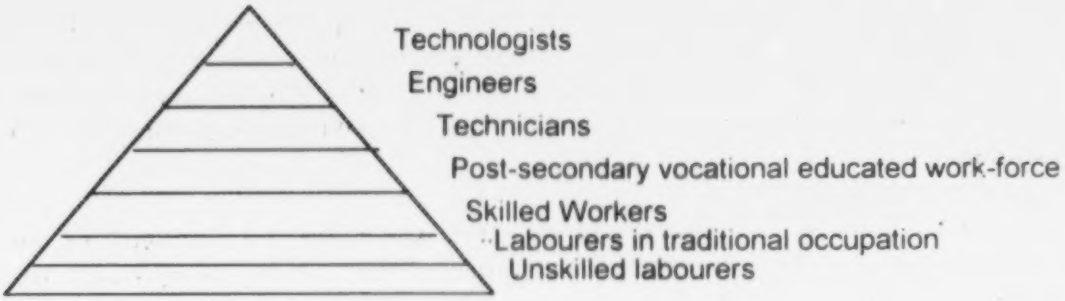
In last few decades, scientific and technological development brought rapid changes in functioning of industries, enterprises as well as various occupations. Old machineries, technologies, techniques and methods are becoming obsolete and outdated in short span of time. New disciplines of engineering, technology and vocations are emerging. For some industries, adoption of modern technology has become essential for their survival in competitive market. In order to manage rapidly changing industries, enterprises and occupation, well-trained manpower in modern technology has to be made available. In this context, technical and vocational education can play a significant role provided it becomes dynamic, incorporate scientific and technological changes in their curricula, modernize their laboratories and workshops and develop mechanism to adopt modern methods of teaching and skill development activities. The technical and vocational education may have to provide life-long education to in-service people/professionals by providing short- term training programmes/refresher courses, etc. The technical and vocational education can also contribute through research and development for improving technology, productivity and working conditions.

2. The Role and Function of Technical and Vocational Education in the National Socio-economic Development

Economic development of any nation depends on its production and service sectors. The number and quality of manpower involved in these sectors are the decisive factors in economic development. These sectors are generally managed by large number of unskilled and sometimes illiterate labourers, semi-skilled and skilled workers, technicians, technologists, engineers, etc. There is an established co-relation between the work force with quality vocational and technical education and economic development. The social structure of the work force which involved in important activities of production and service are generally organized in a Pyramidal Structure. The large number of unskilled labourers are at the bottom of the Pyramid, above that there is a layer of skilled workers and workers involved in traditional occupations. Above this layer are technicians then engineers, technologist and high level scientist and technologist involved in research and development.

This could be shown in schematic diagram as follows:-

Manpower Pyramid of Vocational by and Technical by Educated


Technologists
Engineers
Technicians
Post-secondary vocational educated work-force
Skilled Workers
Labourers in traditional occupation
Unskilled labourers

A nation, which is able to provide adequate vocational and technical education to different level of work force have shown remarkable economic development.

The work force which are responsible for economical development of a nation, unfortunately, always located as lower strata of society. All blue-collared jobs are generally not considered symbol of high social status, particularly in the nations where there was colonial rule for some years.

The vocational education does not generally provide any vertical mobility. There is a need to have more specialized institutes providing vocational education and promoting a particular vocation. In the present time, vocational and technical education with provision of vertical mobility and establishment of specialized institutes will help in economic and social development of nation. It will also contribute to the maintenance of peace and friendly understanding between the various nations.

3. The Role, Function and Participatory Mechanism of Enterprises in Technical and Vocational Education

Technical and vocational education provides manpower to enterprises. The success of an enterprise depends on the quality and number of technical and vocational manpower employed in the enterprise. An enterprise having more number of technical and vocational manpower have better productivity. In case the quality of manpower maintained is high, an enterprise can make a mark in the business.

In order to maintain right quality and quantity of manpower in the enterprise, an enterprise can play an important role in development of vocational and technical education as follows:-

3.1 It should have its own institute of technical and vocational education. In case the number of technical and vocational manpower employed is sufficiently large an enterprise may design its own curricula as per its requirements, change courses with technical and scientific progress and control number of learners as per its requirements. An enterprise can give first hand experience to technical and vocational students in their factories. For all practical purposes enterprise may produce its own manpower requirement through its technical and vocational education institutes. Research and development work could also be assigned to such institutes.

3.2 Technical and vocational institutes which are not managed by an enterprise but providing manpower to enterprises should involve enterprises in the management by involving them to participate. Participation of enterprises in vocational and technical education will help in following manner:-

a) in designing the courses for various levels;

b) in adopting technological progress and to include it for updating ourses;

c) in providing practical training in their factories, workshops, etc.;

d) in providing practicing vocational and technical staff to take few sessions in technical and vocational institutes by enriching experience of students and staff.

Any model of technical and vocational education without participation of enterprises is not good for the learners as well as enterprises. However, participation of enterprise should not overcome the autonomy of vocational and technical institutes. Enterprises should participate as patron and guide to such institutes.

4. Sources of Funds and Training Staff concerning Technical and Vocational Education

In spite of recognizing the fact that to provide financial resources to technical and vocational education is profitable investment for human resources development as well as raising the productivity. Most of the nations are not able to provide adequate funding for technical and vocational education.

Institutes of vocational and technical education are generally established on the initiatives of government or government agencies. In rare cases these institutes are established by voluntary or private agencies. In general, technical and vocation education institutes facing financial problems due to:

a. Vocational and technical education is costlier than general education;

b. Maintenance expenditure is more in such institutes as these institutes have to maintain workshops, laboratories, etc.

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c. Difficulty in getting qualified teachers, training staff need to be better paid and provided with better facilities to retain them.

As proper flow of resources are not coming up to technical and vocational institutes, their standard and quality go on deteriorating as time passes. The graduates coming out from such sub-standard institutes are either non-employable or even if they are employed do not make any significant contribution to the enterprise.

In order to maintain high standard of vocational and technical education, adequate funds may be provided. The government should give liberal sources of funds. Enterprises should also provide funds to such institutes. The institutes should run refresher courses for in-service people, provide consultancy to the enterprises and raise their income. The fee structure of such institute should also be such that the institute should be able to run the institute on no loss no profit basis.

Special efforts may be made to attract talented persons from occupations and retain them. The teachers working in vocational/technical institutes should be paid higher than their counterparts working in enterprises. There should be flexibility for exchange of teachers and vocational/technical persons working in industries.

6. Levels, System of Schooling and Management concerning Technical and Vocational Education

All vocational and technical institutes should be autonomous and there should be minimum interference of government in their academic programmes. Participation of industries/enterprises and society be encouraged in management of these institutes. The following model may be useful for proper development of technical and vocational education.

Vocational Education	Vocational Education	Governance
1) After VII years of schooling	3 years in addition to general ducation	Local Govoernment and participation of enterprises
2) After X years of schooling	2 years of vocational or technical education	State level government or district and participation of enterprises
3) After XII years of schooling	3 years of technical education or 4 years of 1st degree in Eng./Technology	University level governance and participation of enterprises
4) Post-graduate and Research	Postgraduate degree of 1-1/2 years duration research	University level governance and participation of enterprises

There should be vertical mobility available to vocational educated school graduates. Vocational courses in various subjects may be created and university level education in specialized institutes be established like leather technology or ceramic technology, etc. University level institutes may have research and development facilities in emerging areas and inter- disciplinary areas. These institutes may work as apex bodies in the specialized area and entrusted with planning, promoting and development of that area.

Vocational and technical institutes should be run by the professionals who are involved in that particular occupation.

6. Conclusions

The following few conclusions could be drawn from this paper:

a. Vocational and technical education may able to adopt technological development and go on modernizing to meet changing needs of the society.

b. Blue-collared work force is socially at the bottom of the society vertical mobility be provided to them through open school and life-long education to rise up to the top.

c. Many more vocational schools be opened to cover sizable number of working population to improve productivity.

d. Adequate financial resource be made available to vocational and technical institutes.

e. Enterprises should participate in functioning of vocational and technical institutes and also provide finances.

f. All vocational and technical institutes be autonomous managed by professionals.

g. In each identified discipline, there should be specialized institute of the level of a university which may be responsible for the development of that discipline through research.

h. Vocational and technical institutes should provide refresher training, consultancy, etc. in addition to teaching.

THE SCHOOL EDUCATION THROUGH TECHNOLOGICAL ITERACY FOR PRE-VOCATIONAL EDUCATION IN JAPAN

by
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1. Introduction

Regarding formal school education in Japan, there has been a strong call for making the educational system more adaptive to such social changes as a more informed society, an advanced aged society, and internationalized society.

I would like to report the curriculum architecture and content, and the factors for the future of teaching in the lower secondary school through technological literacy of Industrial Arts Education which will begin starting April, 1993.

2. The Content of Presentation

I have taken up these topics for my presentation today. They not only belong to my field of specialization, but also because I am looking forward to attaining further developments in my studies in light of stimuli I hope to receive from you.

This is what I intend to present today.

2.1 On the Curriculum Administration in Japan

a. Organization of the school system

b. Policies of curriculum administration

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2.2 On Industrial Arts Education in the Lower Secondary School

a. Prescribed subject and number of school hours in the lower secondary school.

b. Complete area and grade

2.3 Objectives of Subject

a. Overall objectives of the Industrial Arts

b. Objectives and contents of the main areas.
   - * Wood Working
   - * Electrical Technology
   - * Information Technology

2.4 On the Factors for the Future Technology Education

a. Development of the effective teaching material

b. In-service training for teacher

c. Study on the educational effect in this subject.

3. On the Curriculum Administration in Japan

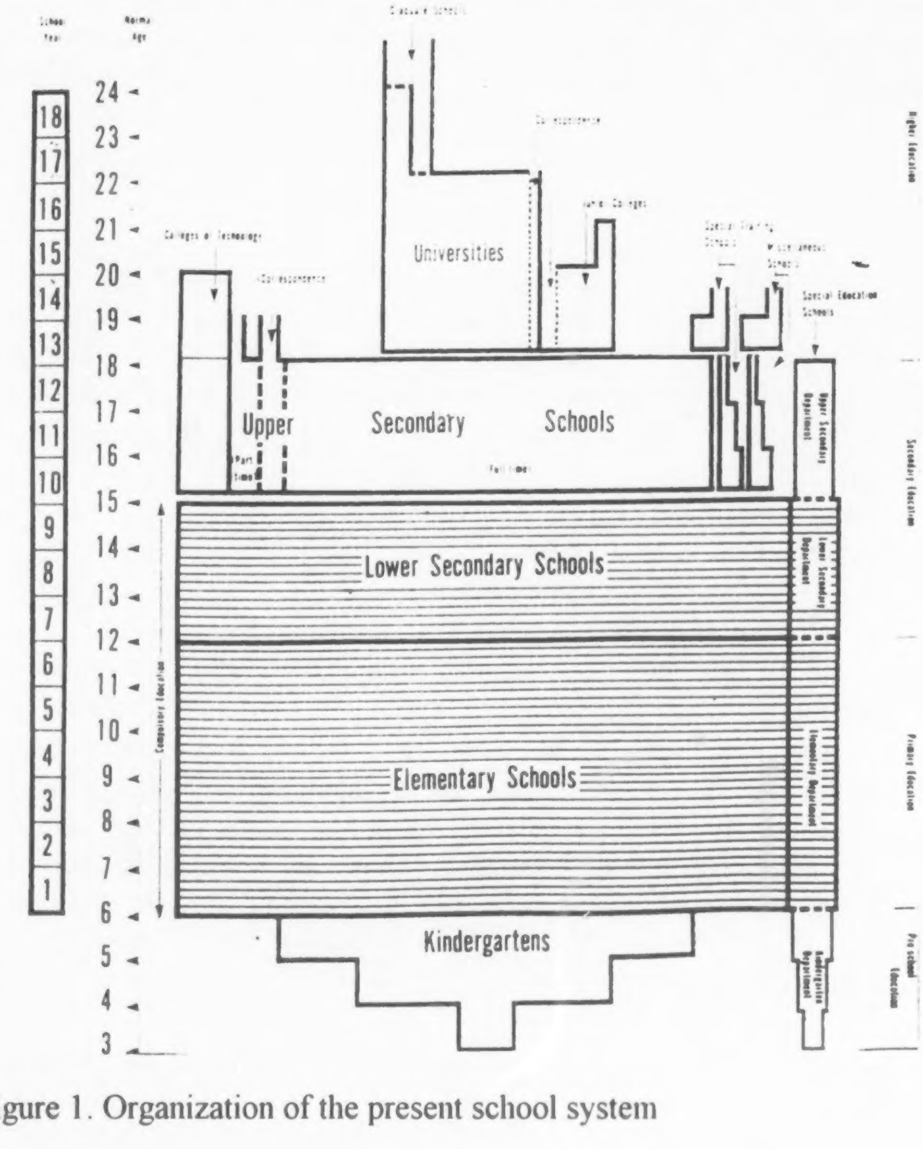
3.1 Organization of the Present School System

This is the figure of organization of the present school system in Japan.

Industrial Arts Education has been put in practice for three years in the lower secondary school, namely junior high school.

3.2 Policies of Curriculum Administration, and Improvement and Enrichment of Elementary and Secondary Education (Improvement of Methods of Teaching)

The National Curriculum is responsible for issuing the Course of Study which sets forth national standards for the curriculum for each school level, with a view to maintaining an optimum standard for education throughout the country, as well as to ensuring equal educational opportunity.


School Year
Normal Age
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
24
23
22
21
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12
11
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9
8
7
6
5
4
3
Graduate Schools
Correspondence
Junior Colleges
Colleges of Technology
Correspondence
Universities
Special Training Schools
Miscellaneous Schools
Special Education Schools
Higher Education
Upper Secondary Schools
Part time
Full time
Upper Secondary Department
Secondary Education
Lower Secondary Schools
Lower Secondary Department
Compulsory Education
Elementary Schools
Elementary Department
Primary Education
Kindergartens
Kindergarten Department
Pre school Education

Figure 1. Organization of the present school system

The basic objectives of the latest revision of the Courses of Study are: to cultivate people who have rich and strong hearts and minds; to nurture in children the ability to cope positively with changes in society; to place more emphasis on basic knowledge and skills with pre-vocational education; and to promote such educational programs as will help students fully develop their individualities.

a. The Revised Courses of Study

In March 1989, the Ministry revised the Courses of Study for kindergartens, elementary schools, lower secondary schools and upper secondary schools, with the basic aim of helping children develop the competence to live an independent life coping with various changes taking place in society.

b. Start of the Courses of Study

The revised Courses of Study for kindergarten was put into effect in 1990. The Course of Study for elementary schools was put into effect in 1992 and the Course of Study for lower secondary schools was put into force in 1993. The scheduled Course of Study for upper secondary schools will take effect in 1994 for the 10th grade, in 1995 for the 11th grade, and in 1996 for the 12th grade.

c. Preparation for the Course of Study

With a View of securing a successful transition to the revised Course of Study, and helping individual schools adopt part of the revised content even before the full implementation, the Ministry began in 1990 to implement certain transitional measures for allowing schools to conduct moral instruction and "special" (extracurricular) activities in accordance with the revised Course of Study. For a smoother transition, the Ministry also organizes training seminars and prepares guidance materials so that teachers may become better informed of the objectives of the revised Course of Study.

d. Revision in Cumulative Record.

In March 1991 changes were made in the form of the cumulative records on pupils for elementary schools and for lower secondary schools.

These revisions in the cumulative records have been carried out with a view towards making them more useful for continuous guidance of students as well as towards promoting educational activities reflecting the basic aim of the revised Course of Study.

4. On Industrial Arts Education in the Lower Secondary School.

4.1 School Hours of Industrial Arts Education.

Prescribed subject and number of school hours in lower secondary school is shown by the following Table 1.

Subject	Grade		
	1	2	3
Japanese Language	175	140	140
Social Studies	140	140	70-105
Mathematics	105	140	140
Science	105	105	105-140
Music	70	35-70	35
Fine Arts	70	35-70	35
Health and Physical Education	105	105	105-140
Industrial Arts and Homemaking	70	70	70-105
Moral Education	35	35	35
Special Activities	35-70	35-70	35-70
Elective Subjects	105-140	105-210	140-280
Total	1050	1050	1050

Note: One Unit school hour is a class period of 50 minutes.

4.2 Complete Area and Grade and Method of Study

Industrial Arts Education covers the following areas, and the areas are taught for students with consideration for the following conditions:

The School should select and teach more than seven areas to students in the eleven areas from A to K, paying due consideration to the realities of school and local community, the characteristics of students, and so forth. Then planning should be made to teach for all students the four areas of "A: Wood Working"; "B: Electrical Technology"; "G: Home held Technology"; and "H: Food" (Table 2).

It should be the standard to teach "A: Wood Working" and "G: Home held Technology" in Grade 1.

The number of school hours to be allowed to the areas of "A: Wood Working", "B: Electrical Technology", "G: Home held Technology", and "H: Food" is 35 school hours as the standard, and that of the other areas is from 20 school hours to 30 school hours as the standard.

Table 2: Complete area in Industrial Arts Education

A: Wood Working

B: Electrical Technology

C: Metal Working

D: Mechanical Technology

E: Cultivate Technology

F: Information Technology

G: Home held Technology

H: Food

I: Clothing

J: Shelter

K: Childcare

☐ : Compulsory Area

a. Example of the Teaching Plan

Next, let me show you an example of teaching plan as shown in Table 3.

Table 3: Example of teaching plan

Grade	1	2	3
	Wood Working (35)	Electrical Tech' (35)	Information Tech' (35)
	Home held Tech' (35)	Food (35)	Mechanical Tech' (35)
			Clothing (35)

The numbers enclosed in brackets are the number of school hours

5. Objectives of the Subject

These are the overall objectives for Industrial Arts Education

5.1 Overall Objectives

To make students acquire fundamental knowledge and technological literacy necessary in human life, by increasing their understanding on the relationship between human life and technological skill in home and activity in society, and to develop an ability to devise and create willingly an attitude to practice.

5.1.1 Objectives and Contents of the Main Areas.

Woodworking

Objectives:

To make students understand the relationship between the properties of wood and ways of working through the design and production activities of simple wood product, and to develop an ability to produce accordingly with the purpose and condition of usage.

Content:

1) To give instruction on the following in regard to the designing of wood product.

a. To know the function and structure of the product in accordance with the purpose and condition of usage.

b. To know the present ideas of the product, and to be able to make an idea sketch and a plan for production.

c. To know the process of production and the procedures of working.

2) To give instruction on the following in regard to the material necessary in production activities of wood products.

a. To know the features and proper usage of wood materials.

b. To know the features and proper usage of adhesive and joint materials.

c. To know the features and the proper usage of painting materials.

3) To give instruction on the following in regard to the usage of tools and machines for woodworking.

a. To know the composition and proper usage of tools and machines for woodworking.

b. To be able to mark and cut and plane the wood materials through the proper use of tools for woodworking.

c. To be able to cut and plane the wood materials through the proper use of machines for woodworking.

d. To be able to assemble adequately following: the idea, the sketch, and the plan for production.

e. To be able to paint adequately depending on the usage of the finished product.

4) To make student examine the role of wood in daily life and industry.

Electrical Technology

Objectives:

To make students understand the structure of electric circuit and the function and use of electron through the activities of handling electric devices and of designing and manufacturing of simple electric circuits, and to develop an ability to utilize electric devices properly and safely.

Content:

1) To give instruction on the following in regard to the maintenance of electric devices.

a. To be able to examine electric devices.

b. To be able to connect a cord with an electric device and with wiring accessories.

c. To know house wiring, and to be able to prevent accidents caused by electric shock, overheating and a short circuit.

2) To give instruction on the following in regard to the design and assembly simple electric circuit.

a. To know graphical notations for electric circuit elements, such as a switch, resistor, transistor, etc., and a circuit diagram.

b. To know the function and usage of electric circuit elements, such as switch, resistor, transistor, etc.

c. To be able to design simple electric circuit.

d. To be able to arrange and fit parts and wiring.

3) To give instruction on the following in regard to the circuit and structure of electric devices and electric materials.

a. To be able to read a circuit diagram of an electric device.

b. To understand the circuit and structure of an electric device.

c. To understand the properties of conductive and insulating materials.

4) To make students understand the functions of electricity in everyday life and industry.

Information Technology

Objectives:

To make students understand the utilization and function of computer through the operation of computer, and to develop a fundamental ability to apply the information properly.

Content:

1) To give instruction on the following in regard to the hardware of computer.

a. To know the basis of computer system and function of each equipment.

b. To know the function of software.

2) To give instruction on the following in regard to the fundamental operation of computer and making simple program.

a. To be able to do the fundamental operation of computer.

b. To know the function of program, and to be able to make simple program.

3) To give instruction on the following in regard to the utilization of computer.

a. To be able to apply information through the use of software.

b. To know the field which computer is utilized.

4) To make students understand the role and influence of information and computer in everyday life and industry.

(Those who desire to learn further details concerning Industrial Arts content are encouraged to contact me.)

6. Factors for the Future Technology Education.

I think that there are three important factors for the future proceeding to the twenty-first Century and present the substance in these points of view as follows:

6.1. Development of the Effective Teaching Materials.

It is necessary to develop teaching materials which have the educational content as follows:

1) Teaching material to career developing student's individuality.

2) Teaching material to pre-vocational interest student in content.

3) The systematically and continuous organization of the teaching materials.

6.2. In-service Training for Teachers.

It is necessary to enhance the teacher's ability for higher educational methods of teaching and counseling mind more knowledge in content area. Then it is desired to provide in-service training with the following :

1) The completion of in-service training for teacher conducted by the respective schools, teachers team, municipal, and prefectural level.

2) The development of teaching materials for the in-service training for teachers in active service.

3) The guarantee of the opportunity of the in-service training for teachers in active service.

6.3 Study on the Educational Effects on Students.

I have to investigate the higher educational purpose of the following:

1) On the development of the creative abilities through technological activity.

2) On the development of the ability of problem solving with pre-vocational guidance.

3) On the fostering of self-education for occupational choice.

(The author is also grateful to Dr. H. Miyagawa, Hyogo University of Teacher Education for providing the sample and Mr. Chen Hua Shent, visiting Fellow Saitama University for his help in the suggestions.)

TECHNICAL AND VOCATIONAL EDUCATION IN MALAYSIA: CURRENT STATUS AND FUTURE DIRECTION

by
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1. Introduction

1.1 Technical and Vocational Education (TVE) in Malaysia is emerging as an area of crucial importance for economic and social development. Training pupils for job and exposing them early to work situation have developed extensively in Malaysia education system since the Cabinet Committee Report on Education was published in 1979. With TVE's recognition as the central purpose of education, it is now been positively accepted as a viable alternative system to provide educational training. Consequently, the dimension of 'cognitive and employable skills' is now being injected into the general school curriculum with a view of exposing pupils early to pre-vocational skills and preparing them for future labor market demand.

1.2 The Role and Function of TVE in the National Socio-economic Development

The Sixth Malaysia plan (1991-1995) which constitutes the first phase of the Second Outline Prospective Plan (OPP2: 1991-2000) has placed the human resource development as the major emphasis and strategic policy to enhance Malaysian's entry into an industrialized country. The strategy to enhance this development objective is broad and comprehensive and encompasses development policies to diversify the industrial base, enhance human development, promote echnological upgrading and reduce structural imbalance among sectors and regions in the country.

1.3 Hence, the foci of educational developments are the improvement of the quality of education, the broadening of employable skills in the curriculum and the creation of efficient training system. With increasing adoption of modern technology and production processes to improve productivity coupled with international competitiveness, TVE must produce school graduates with basic cognitive ability and skill trainings which could then be enhanced and upgraded in the work place situation. To meet this end, the Report of the Cabinet Committee on Training (1991) suggested the quality and supply of industrial skilled workers needed to be improved in the TVE institutions through cost effective measures of efficiency and effectiveness. The strategies, as outlined on the Sixth Malaysia plan, include several actions:

> **1.3.1** increasing the share of vocational enrollments as a percentage the total upper secondary enrollment which now stands at 8 percent by establishing eight specialized vocational schools and four polytechnics;
>
> **1.3.2** updating TVE curricula in accordance with changing needs of the industries and strengthening the minds an flexible;
>
> **1.3.3** providing the necessary mandate to TVE institutions to be flexible and market driven;
>
> **1.3.4** building responsiveness to the training needs of local community and industry; and
>
> **1.3.5** strengthening coordination of vocational and training.

1.4 An important issue in the Socio-economic relationship is the rationalization of TVE to the labour-market. How do TVE serve the labour market demand? In the course of industrialization, the job market or work situation was separated into two categories. The first is referred to as the 'primary labour market' and includes complex jobs requiring formal training, offering prospects for advancement and relative job security. This is a preferred job market by most people. Those who enter this labor market are expected to manage situations and contribute creatively to improvement and innovation.

1.5 The second sector is the secondary labor market. It consists of work requiring limited qualification or training. The line production workers who work on simple, externally controlled and repetitive operation, as conceptualized in Taylorism, do not require vocational training but they can be trained on the job at the work place. This job market situation poses a critical policy issue pertaining to the role of TVE schools: which of the two labour markets should TVE effectively serve? Hence, TVE must have an appropriate and selective answer in relation to the labour market for cost is major factor in the decision. More investment on TVE would be at the expense of other educational sectors such as primary or secondary level.

1.6 Because of the high training cost and to reduce the wastage, TVE must be selective in its service to the labour market. One decision is that for the future. TVE should primarily focuses its education and training on the service to the primary labour market. The secondary labor market with its low order skills should be best serviced by the general school system for the supply factor is high. Moreover, it does not require expensive training and investment. These low order line production jobs can be trained in the work situation.

1.7 Hence, vocational schools will offer high order subjects such as Electronic, Electrical, Mechanical Engineering, Computer Science in addition to the 'hard' academic subjects such as Additional Mathematics, Physics, Chemistry. With these curriculum innovations, they provide the pupils with the cognitive strengths as well as the flexibility to adopt to technological change in the factory. To meet these emerging needs, the new eight vocational schools built under the Sixth Malaysia Plan will be different in form from the other vocational schools. Their emphasis will be more on technology than vocational.

2. The Link between Education, Training and Work

2.1 Another issue facing TVE is to design a closer link between education and the world of work. TVE must develop programs that are relevant to employment requirements and ultimately, to work performance. Yet, the task is not easy to accomplish by a school system for its ability to respond to work place demand and technological development is slow. In most instances, when the school system develops its capacity to meet the required demands, the work situation and technological changes have moved a step further. In fact, this expectation is a high order ideal which in reality is difficult to achieve by a school system on its own unless there is extensive support from the industries, as in the German Dual System.

2.2 Several reasons can explain the TVE's need to design appropriate strategy to relate to work situation:

a. job requirements change in number and kind over time;

b. occupations born, grow and die with changes on the level of production activity and the technology which supports them;

c. international competition is causing profound, continuing changes in the nature of work and the skill required to do it; and

d. the rapid application of technologies driven by international competition, will continue to have uncertain effect on the skills required for working.

2.3 These implications for TVE are enormous by forcing it to reshape its agenda and direction. Consequently, TVE in Malaysia must come out with appropriate policy answers with two contrasting views. One view is that the school system should focus primarily on basic cognitive skills rather than the skill component. Another contrasting view is that the work skill component should be given more emphasis than the cognitive areas. Related to these two views, is whether the school system is the best place to provide skill trainings, especially the cost factor has always been the major constraint for TVE's operation and development. Providing curriculum for skill training is far more expensive than general academic training. Moreover, there is no guarantee that it provides the pupils with the necessary skills for the work place.

2.4 We are forced to define our future role. For several years, the function of the Ministry is to provide education first; hence the name of the division that oversees TVE is Technical and Vocational Education. The work training is not included for it is felt that the training component is best provided by other agencies and private sectors. In order to balance these demands, TVE will have its main focus in the future towards the strengthening of the mind and building cognitive ability, giving less emphasis on the narrow hands-on skill components. This is to adjust to Malaysia's industrialization program which is moving towards high order skill and precision industries which requires a different level of work force who must be flexible and mentally competent to change with technological requirements and can be retrained easily.

2.5 Peter Drucker in his book 'Post-Capitalist Society' says that the future belongs to people who use their heads instead of their hands: the knowledged workers. To meet these future manpower demands, TVE in Malaysia is now undergoing the process of readjustment whereby courses in TVE are now redesigned to be more related to technology and hard sciences rather than the previous narrow vocational curriculum. The new eight vocational schools now under design will concentrate more on academic and technological subjects, thus reducing significantly the vocational components. For Malaysia can no longer compete with the low order skill industries. The population base for production workers is small and cannot compete with imported foreign labour in terms of salary offerings. It is best felt that the labour market must move into the high order industries; thus the labour market of the future as envisioned in Dr. Mahathir's vision of 2020 (The Prime Minister), is a knowledged and informative workhorse. To meet this future direction, TVE is now reshaping its policy to produce workers who are knowledged, informative and can be retrained easily. Hence; the strengthening of the cognitive ability is our primary focus in TVE of the future.

3. The Role, Function and Participatory Mechanism of Enterprises in TVE

3.1 Several agencies, both in the public and private sector, are involved in providing TVE to the population. TVE at the school level (6-18 years) is directly administered by the Technical and Vocational Education Division (TAVED) of the Ministry of Education. At present, TVE is provided in 70 specialized vocational schools and another eight new schools are in the planning stage. About 35,000 students are enrolled in 70 schools in 17 different vocational subjects which make up about 7 percent of the total general school population. The enrollment figure, although small, does not reflect the real situation in terms of exposure to pre-vocational skills. Taking into account that every student is exposed to pre-vocational subjects of Manipulative Skills and Living Skills, then the real figure in term of exposure to pre-vocational subjects is relatively 100 percent.

3.2 In addition to MOE, several other government agencies are involved in providing vocational training such as Ministry of Human Resources, Ministry of Rural Development, Ministry of Youth and Sports, Ministry of Social Welfare and Ministry of Agriculture. Courses offered by these agencies are limited in scope and emphasized mainly on the training component rather than the academic areas. To supplement the efforts of the government in providing skill training opportunities, private training agencies are also conducting courses at various levels to cater mainly for the needs of the private sector. Many of the private training agencies prepare students for local examinations or tests such as National Vocational Training Council Skills Tests as well as examinations conducted by overseas organizations like City and Guilds of London, the London Chamber of Commerce, etc.

3.3 Since the ability and capacity the public sector to provide vocational training is limited, efforts are now directed to strengthen the TVE delivery system. Existing government system is weak in terms of market drivan for skill requirements are not well monitored and the mechanism for insuring relevance of output is inadequate. Thus strategies and plans are now designed to improve the responsiveness of training system to market demands. For public training to be more responsive, it is essential that mechanism for feedback must be developed. Among the strategies developed are

a. greater flexibility in management of education and training institutes;

b. strengthening linkage between training and technological charge;

c. constant review or course design and curriculum, and

d. establishment of advisory councils. Within the MOE, Advisory Council on TVE was established to review the selection of courses and programmes.

4. Sources of Funds and Teaching Staff concerning TVE

4.1 The government is committed towards the development of education and training. Substantial amount is allocated for operational expenditure which constitutes 18 percent or 6 percent of GNP of the total annual government expenditure. The priority for TVE is reflected in the pupil unit cost which amount to one TVE student is equivalent to four general academic students. A substantial sum of 900 million ringgit is allocated for development of TVE system under the Sixth Malaysian Plan of which RM 8,501 million has been allocated for education. About 40 percent of the development budget to build eight new vocational schools, four new polytechnics and upgrading of existing facilities are financed by ADB and World Bank Loans. Contribution from private sector is minimal.

4.2 Qualified staff is a major problem in TVE development. Staffs are recruited directly from local universities and specialized technical training college. Most of the staff do not have industrial and work experience and they function relatively as classroom teachers. Teachers were hired strictly on the basis of their academic qualifications. Very few apply for teaching positions in the vocational schools or polytechnics. The unwillingness of people from industry for teaching jobs and the difficulty of recruiting them are due to the salary factor and the better working and service facilities provided by the industries as compared to government institutions. Even with the incentives, the staff turnover is rather high compared to academic teachers. It is also difficult to maintain a suitable flow of teachers. The high rates of mobility are damaging to the efficiency and quality of the instructions and will always pose a critical problem to the TVE's operation in general. One way to deal with the problem which the MOE is currently looking into is to create flexibility in staff recruitment and work closely with industries through joint collaboration and short attachment.

4.3 One strategy to attract people to stay with the teaching position is to provide salary incentives. Teachers with vocational skills are now categorized as critical service and being provided with bonus incentives of 10 percent higher salaries as compared to their counterpart academic teachers. TVE teachers have better opportunities for in-service training and they are mostly sent overseas for their training and skill upgrading.

5. Levels, System of Schooling and Management concerning TVE

5.1 One major problem faced in the early years was to create interest for vocational education. TVE was beset with image problem because of the inequality of status perceived by the public between academic and vocational education. TVE faced a stigma of a lower social value than the academic subject for it was meant for less able academic students or dropouts. There was also perception that TVE rarely equip pupils with the right skills for employment since there was poor relationship or linkage with work situation.

5.2 Hence, the job market perceived the vocational graduates with low skills and poor mental capabilities. Majority of TVE graduates were offered low salaries and low order jobs which could also be performed equally well by general school graduates. With less emphasis of cognitive thinking in science and mathematics, TVE failed to provide pupils with the flexibility of adjustment and the potential of upgrading in the work place. It also deprived the graduates to pursue higher education. Vocational education for all intents and purposes, was meant to be terminal.

5.3 To deal these shortcomings, serious thinking developed in the 1970's to upgrade the status of vocational schools as a viable alternative to the academic stream. The impetus was given by the release of the Cabinet Committee Report on Education (1980) which emphasized the need for the long term upgrading of TVE, both qualitatively and quantitatively. Facilities are upgraded to meet the needs of high order skills in the job market and to keep abreast with technological development. Courses and curricular are revamped and modified that would enhance both cognitive thinking and hands-on skills. A balanced curriculum was introduced: Sixty percent of the time are now devoted to academic subjects and forty percent to basic vocational skills.

5.4 Specialized TVE secondary schools were built to cater for the increasing demand in the mechanical, electrical and electronic trades, including computer technology. The two year vocational education at upper secondary level is no longer terminal in pattern, for under the current system, vocational students can proceed for higher education. At the end of two year course in the upper secondary level, vocational students take the Malaysia Certificate of Education (Vocational) Examination which is equivalent to the Malaysia Certificate of Education Examination offered by the general academic students. With this equivalency in academic status of the formal sector image, the status of TVE has been considerably improved. TVE is now an integration of hands-on skill and cognitive thinking. As a result, the quality of pupils intake into TVE has improved.

5.5 The labour market situation, the cost factor and the search for efficiency have prompted the MOE to make global structural changes in the overall educational system. Pre-vocational subjects are exposed early to pupils which begin in Grade 4 of primary education. A new subject, Manipulative Skills, was introduced to all pupils for three years from Grade 4 to Grade 6 of primary level. With Manipulative skills, primary school pupils are provided with basic pre-vocational opportunities and experiences to develop their vocational awareness and understanding. For example, working or tinkering with electrical gadgets at an early age will be new and exciting exposures which can later develop into valuable and long lasting concept to vocational understanding. Through the exposure, pupils attitude and work entries will be laid, including respect for honest labor and for works with the hands. It will develop understanding of tools, machines and simple assembly processes which can further be developed into vocational skills. Reading materials and teaching processes include some direct relationship to vocational orientation.

5.6 The early exposure to vocational orientation at primary level through Manipulative Skills is further strengthened for three years at the lower secondary level. A new integrative subject, Living Skills, was introduced in 1990 replacing the old compartmentalized vocational subjects. Under the new Living Skills subject, all pupils will undergo three year course of integrated vocational subjects of Industrial Arts, Business Studies, Home Economics and Agriculture Sciences. Before, these four components of vocational subjects were offered as a separate entity. The rationale for integrating the four disciplines is to provide the flexibility of choice and to equip every pupil with some background of skills for every day living needs or usage's. For pupils who fail to continue their education or dropout of schools, at least they have wider choices for occupational options nor are they confined to some narrow areas of vocational skills as in the traditional vocational subjects.

5.7 The choice of streaming between academic and TVE begins at the form four in the upper secondary level. Under the new secondary school curriculum, which will be fully implemented at upper secondary level next year, pupils have four choices for their next two years of education; the arts and humanities stream, the science stream, the religious stream and the Technical and Vocational stream. For TVE stream, three types of courses are available for interested pupils. The first is the technical or technological stream. Under this stream, pupils, in addition to the academic subjects, can offer technical subjects such as technical drawing, electronic, electrical, civil and mechanical engineering. This technical stream takes in better qualified students with strong background in mathematics and science background to pursue engineering courses at the tertiary level who will later in their career function as R & D engineers. At present ,there are nine of these schools and another 8 are in the planning stage.

5.8 For pupils who are interested in vocational skills, the MOE provides the second option in the 70 vocational schools and 17 vocational subjects (see Appendix A). The objective of vocational schools is to expose pupils to basic vocational disciplines who will later move into industries. With additional industrial upgrading, they will function as production technicians and supervisors. In the third option the schools also provide short and specialized trade courses and work closely with National Vocational and Training Council. The examination and certification is controlled by the National Vocational and Training Council. The course structure is a combination of academic subjects which include language, mathematics, science, geography, history and religious or moral studies (60 percent) and three vocational subjects pertaining to one discipline such as technology, drawing and practical (40 percent). The rationale for this combination is to ascertain that graduates of vocational schools have the academic strengths and basic vocational skills to be creative, innovative, and flexible to adjusts to technological changes. The futures direction of TVE is to strengthen the mind and cognitive ability more than the vocational skills. This is to prepare pupils to enter the next phase of industrial development, that is, high order precision production engineering.

6. Conclusion

6.1 In retrospect, this paper provides a brief outline of TVE current status and its future direction. The policy formulation currently in exercise is clearly an attempt to upgrade the quality of vocational school graduates away from the narrow pre-employment vocational skills to a broad base in order to give the flexibility and mobility on working life. The TVE courses are a combination of academic, vocational and technology subjects. The curricular emphasize the importance of a broad base cognitive ability and basic skills to permit an individual to have a rich choice in the labor market and change jobs, if need be.

Appendix I

Secondary Vocational Schools

	Type of Schools	Total
1.	Engineering	16
2.	Engineering and Commerce	29
3.	Engineering (Specialized)	8
4.	Engineering, Home Science and Commerce	1

5.	Commerce	5
6.	Agriculture	3
7.	Engineering, Home Science	3
8.	Home Science	5
9.	Home Science and Commerce	1
10.	Engineering, Home Science and Agriculture	1
11.	Commerce and Agriculture	1
		70

Appendix II

Courses Offered at Vocational Schools

A) Vocational Stream

1. Electrical
2. Electronics
3. Machine shop Practice
4. Automotive
5. Refrigeration and air-conditioning
6. Welding & Metal Fabrication
7. Building Construction
8. Catering
9. Bakery and Confectionery
10. Child Care
11. Fashion Design & Dressmaking
12. Beauty Culture
13. Office Management
14. Business Management
15. Ornamental Horticulture
16. Farm Machinery
17. Farm Management

B)	Skill stream		
	Post Lower Secondary		Post Upper Secondary
1.	Domestic & Industrial Wiring	1.	Mechanical Drafting
2.	Radio & TV Servicing	2.	Advanced Welding
3.	General Mechanical fitting	3.	Advanced Automotive
4.	Turner	4.	Advanced Automotive (Diesel)

5.	Basic General Machining	5.	Foundry Practice
6.	Arc Welding	6.	Auto body work & Spray Painting
7.	Automobile Mechanic	7.	Tool & Die Making
8.	Automotive Electrical	8.	Millwright
9.	Refrigeration & Air-Conditioning	9.	Advanced refrigeration & air conditioning
10.	Bricklaying & Plastering	10.	Advanced General Machining
11.	Plumbing	11.	Architectural Drafting
12.	Furniture Making	12.	Civil Engineering Drafting
13.	Tiling & Flooring	13.	Advanced Furniture Making
14.	Plastering	14.	Instrument Maintenance
15.	Catering	15.	Instrumentation & Control
16.	Dressmaking	16.	Industrial Electronic
17.	Beauty Culture		
18.	Carpentry & Joinery		

TECHNICAL AND VOCATIONAL EDUCATION AND MODENIZATION IN NIGERIA

by

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NIGERIA

Nigeria is a federation of 30 states with a Federal Capital Territory newly sited at Abuja. It is the most populous country in Africa, having a population of about 88.5 million spread over its 924,630 km land area. It is also a fast growing free-market industrial economy with numerous small and medium scale industrial undertakings. By and large, however, the country operates as a mono-export economy in crude oil that petroleum constitutes 85% of its export. Domestic industrial production scarcely meets the ever expanding domestic demand with the result that the country remains largely as a high importer and consumer of foreign goods.

Politically, the country operates a 3-tier government, namely: Federal, State and Local governments. Each tier of government has its level of constitutional and legislative responsibilities. Education is a concurrent responsibility of all tiers of Government. That is, each tier of Government in Nigeria can legislate concurrently on education within the context of the constitutional provisions and federal Laws. The Federal Government, however, has exclusive responsibility for determining the standards of education and skills to be attained at all levels of education in the Federation.

1. The General Structure of the Nigerian Education System

1.1 As in all conscious and modernizing societies, the education system in Nigeria is a LIVING THING. It carries along in its form and spirit the influence of national history whilst grappling with the problems of the present and seeking to create bright future for the nation. Education holds the key to some of the inner workings of the national life, and seeks to remedy the failing of the national character whilst yet living in it.

1.2 The current form and structure of education in Nigeria evolved from the national experience which occurred as natural consequence of the political metamorphosis from a colonial to a republican state. The necessary political power restructuring which followed the independence process in the 1960s created a new sense of national being and cohesion in the rather plural society. Besides, there has been the historical influence of the colonial liberal education ideology which cast aspersions on education for work. The reality was staring the nation in the face that it needed technological manpower for economic development which it could not have from its colonial education inheritance. All these constituted the spring board for philosophizing on education from the early 1970s.

1.3 Following an intensive intellectual ferment and national dialogue across the nation on course of education for national development in the 1970s and beyond, the 6-3-3-4 education policy was adopted in 1977 and subsequently revised in 1981. It envisages 6 years of Primary Education, 3 years of Junior Secondary, 3 years of Senior Secondary and 4 years of Higher(tertiary) education as illustrated in the Appendix.

1.4 For the purpose of national development the policy prescribes the following four objectives for all types and levels of education:

a. the inculcation of national consciousness and national unity;

b. the inculcation of the right type of values and attitudes for the survival of the individual and the Nigerian society;

c. the training of the mind in the understanding of the world around; and

d. the acquisition of appropriate skills, abilities and competencies both mental and physical as equipment for the individual to live in and contribute to the development of the society.

1.5 the policy goes on to specify that in the pursuit of the above educational objectives, the quality of instruction at all levels should reflect the following value orientations:

a. respect for the worth and dignity of man;

b. faith in man's ability to make rational decisions;

c. moral and spiritual sensitivities in human relations;

d. shared responsibility for the common good of the society;

e. respect for labour as the primary source of self identity and sustenance; and

f. physical, emotional and psychological well-being as the necessities of life.

2. The Operation of the Nigerian Education System

2.1 In order to fulfill the cardinal objectives of national development, the Nigerian education system is designed to integrate formal and non-formal modes of education delivery and to operate with flexibility creating abundant opportunities for career choice and development at every stage of life of the individual. From the year 1992, a 9-year compulsory basic education scheme was instituted. This means that education up to junior secondary is compulsory for all. The purpose of this is to provide every child ample opportunities to benefit from educational provision designed to meet basic learning needs, namely, literacy, oral expression, numeracy, problem-solving and general technical versatility. For this purpose, the curricula at both the primary and junior secondary levels comprise elements of general and vocational education in an increasing order of vertical complexity and intensity. For instance, at the primary school level it is compulsory for the pupil to be exposed to elements of vocational education in music and cultural arts, agriculture and home economics. The general education subjects comprise language study, science, mathematics, health and physical education, religious instruction and social studies.

2.2 At the junior secondary level the vocational education aspects comprise introductory technology (i.e prevocational studies in Metalwork, Woodwork, Plastics, Rubber, Ceramics, Automechanics and Electronics and Electrical Installation), technical drawing, local crafts, home economics and business studies (typewriting, shorthand, book-keeping). The injection of vocational education elements into an otherwise 9-year basic education programme, is to ensure the attainment of career awareness, orientation and exploration at the completion of junior secondary education.

2.3 After junior secondary education, only two options are available to students for further formal education, namely, a 3-year senior secondary or a 3-year technical college education. The curriculum at senior secondary level is designed to be both academic and vocational to provide further general education as well as prepare students for higher education and provide pre-professional exposure. The curriculum at senior secondary level does not provide adequate occupational training for direct employment.

2.4 On the other hand, the specific function of Technical Colleges, that is the second optional route to further education after junior secondary education, is to prepare students as craftsmen and mastercraftsmen of their various occupations for direct employment. The average duration of craft courses is 3 years. Students enter advanced craft courses for 1 year training after having a minimum of 2 years of industrial experience.

2.5 In the formal tertiary sector there are two types of institutions which offer professional and technical education. They are: the conventional and technological universities, the polytechnics and colleges of education. Professional education and training is the province of universities through their various degree programmes. Technical education is a concept reserved for the education of technologist and technician cadre of manpower in all occupational fields as offered by the polytechnics, monotechnics and colleges of education. It is important to note that Nigeria maintains a unitary system of higher education with clear division of academic labour for the types of institutions involved. Thus degree programmes are offered only by institutions designated as universities whilst technologist and technician level programmes are offered by polytechnics, monotechnics and colleges of education. Professional bodies in the non-formal system collaborate with education institutions and relevant agencies in the design of appropriate curricula and in the maintenance of standards of training.

2.6 All things put together in their dynamic perspective, it can be said that Nigeria is fast evolving through the operation of its 6-3-3-4 education system a three-stream system of curricula offerings. It is now easy to stream curricula as *Liberal arts* based, *science* based and *technology* based from the senior secondary level and it is also easy to talk of science education as distinct from technology education or liberal arts education as distinct from either science or technology education. This streaming, indeed, facilitates educational management particularly in regard to the provision of facilities, curricula development, career education, teacher training and institutional management.

2.7 There is no way of talking about Nigeria's formal education system without reference to the non-formal system as both systems exist in an integral but flexible form complementing each other. The chief characteristics of Nigeria's non-formal education system are that:

a. it is not chronologically based;

b. it serves identifiable objectives and clienteles; and

c. its curricula are of consequence not spirally designed.

Furthermore, the non-formal education system makes possible the idea of life-long education for all and this is crucial for national development.

3. The Position and Mission of Technical and Vocational Education in the Nigerian 6-3-3-4 Education System

3.1 In Nigeria, technical and vocational education constitute two distinct educational subsectors which are characterised by their purposes, levels of institutions, course offerings, organization and control. Generally the institutions in the technical education subsector are of tertiary level but non-university in status. Their primary role is to produce middle or technician level manpower for commerce, industry, agriculture, healthcare and teaching. The three (3) types of institutions distinguishable in the technical education subsector include:- Polytechnic or Colleges of Technology, Monotechnics (mono-disciplinary tertiary colleges) and Colleges of education. The colleges of Education in this subsector are those which produce technical teachers.

3.2 On the other hand, vocational education is regarded as an aspect of secondary education whose primary role is to produce low level manpower that is: operatives, artisans, craftsmen and mastercraftsmen for commerce, industry, agriculture and ancillary services. The institutions in this subsector include Technical Colleges and BEST(Business and Engineering Skills Training)Centres hitherto called Vocational Training Centres. BEST Centtres are lower in status than Technical Colleges. This is because their primary role is to produce operatives and artisans. The hierarchical status and roles of the institutions in the national education system is as indicated below:

Education Level	Institution Type	Primary Manpower Production Role
Tertiary	University	Professionals (i.e high level manpower)
	Polytechnic/ Monotechnic	Technologists and technician (i.e. middle level manpower)
	College of Education (Technical)	Technician level technical teachers(i.e middle level manpower)
Secondary	Technical College	Craftmen and mastercraftmen(i.e low level manpower)
Post Primary	BEST Centre	Operatives and artisans(i.e low level manpower)

Primary	Primary School	Basic Education

3.3 By way of organization and control, the institutions in the technical education subsector are largely self-governing but with some buffer instruments of control by Government. These instruments include the governing councils and national standards control agencies. Currently, institutions in the technical education subsector are largely public institutions.

3.4 In the vocational education subsector, Government in the Federation assumes direct control of their institutions but interfere least with private participation save in regard to maintenance of standards. Greater participation by private proprietors is encouraged and flourishes more in the vocational education subsector.

3.5 The approximate numerical strength of institutions in each subsector is as indicated in the table below:

SUBSECTOR	INSTITUTION TYPE	OWNERSHIP AND CONTROL		TOTAL NUMBER	TOTAL ENROLL-MENT AS AT 1991
		FEDERAL	STATE		
Technical Education	Polytechnics	14	19	31	54,993
	Colleges of Education	8	46*	54	85,574
Vocational Education	Technical Colleges	12	116	128	47,637
	BEST Centres (Business and Engineering Skills Training Centres)	–	750 (largely private)	750	64,652

* not all with technical programmes.

3.6 The Nigeria's 6-3-3-4 education system makes Technical Colleges the only alternative (i.e. alternative to senior Secondary) route to further formal education and training after junior secondary education. This means that students who complete their junior secondary education can either choose to proceed to senior secondary school for further general or pre-professional education or proceed to Technical Colleges for Vocational Training. As indicated above, technical subjects are included in the curricula of both junior and senior secondary schools only as a way of inculcating general technical versatility and enhancing pre-professional orientation. This policy stance establishes the crucial importance of technical colleges in the national education system.

3.7 If one compares the statistics above with similar statistics in the general education subsectors, it is easy to see the limited scope of technical and vocational education subsectors in the Nigerian education system. The current statistics in regard to primary and secondary education are as follows:

Institution Type	No. of Schools	Total Enrollment	Remarks
Primary School	34,904	12.7 million	Rate of transition to junior secondary is 43%
Secondary School			
(a) Junior School	5,868	1.71 million	Only very few students transit to Technical Colleges after their junior secondary education compare 70,000 to 0.97 million.
(b) Senior School		0.97 million	
		2.68 million	

The reasons for the apparent limited scope of technical and vocational education is rooted in the pervading antithetical influence of liberal education culture. Nonetheless, technical and vocational education has a mission and that is:

a. to infuse into all adequate vocational efficiency for effective living;

b. to eliminate unemployment by equipping the generality of out-of-school youths and adults with saleable skills;

c. to enhance and sustain national economic and technological development; and

d. to engender national economic prosperity.

3.8 The mission of Technical and Vocational education cited above have now become imperative realities to pursue. For instance, from the beginning of this decade, Nigeria sets itself to :

a. expand the productive base of the economy through increased agricultural and industrial production;

b. develop new infrastructural facilities and rehabilitate existing ones to provide conductive environments for private investment;

c. lay a solid foundation for self-reliant economy through technological development; and

d. reduce the level of unemployment through the creation of ample opportunities for gainful employment.

3.9 However, it has been realized that these economic development objectives would not be achieved if technical and vocational education subsectors continue to remain inadequately developed to provide the much needed skilled manpower to generate and sustain the desirable economic activities. It has also been realized that unlike some developed economies, Nigeria has a greatly distorted manpower structure. That is, there already exists a situation where the number of university graduates far exceeds the number of technicians or craftsmen. And to compound the problem, a growing army of the unemployed, due to their lack of saleable skills, now exists as an inflammable population that could be easily ignited to cause social turmoil under conditions of idleness and lack of living sustenance. For instance, by 1991, unemployment figure for the 15-24 year olds rose to 4.2% of the population(i.e. 3.72 million). This situation is regarded by the Federal Government as no mean threat. Accordingly, the Federal Government has, of necessity, now turned to technical and vocational education for the solution. There is the recognition that no country has made economic progress without a sound base in technical and vocational education. The strategy being adopted by the Federal Government is to assume demonstrable leadership in the implementation of national policies on technical and vocational education including the establishment and management of institutions in the subsectors. To enhance efficiency, national institutional arrangements have been put in place for policy management and quality control.

4. The Historical Root and Problems of Operation of Technical and Vocational Education in Nigeria.

4.1 Nigeria, no doubt, is making significant progress in providing the structural and policy framework for the development and operation of technical and vocational education and in providing a rightful place for it in the national education system. However, this type of education appears to be plagued by many problems.

4.2 We know education as the only means of social development for mankind and consequently every society that progresses does so by means of some form of education to its members. The chief forms of education in the ancient times had to do with food, shelter, clothing, and defence. The modes of dispensation of ancient forms of education were both informal and non-formal. Formal education evolved from these premordial modes as a feature of organized modern societies. The communities that constitute Nigeria have all along in their history been in the business of education. They have all along been sustaining themselves with their traditional modes of vocational education. Vocational education is not therefore new in Nigeria, or for that matter in any community. A Nigerian child learns the language and occupation of his parents and relatives. Thus he grows up to communicate well in his mother tongue and become proud practitioner of his parent's traditional occupation after due period of traditional apprenticeship.

4.3 Colonization did introduce formal vocational training in Nigeria to meet the demand for skilled manpower to maintain the colonial administration. However, the colonial masters did bring with them their liberal education culture which despises manual work and holds it to be unfit for the intellectual and leadership class. That culture created liberal education in Nigeria and sustained it as the antithesis of technical and vocational education. The Platonic argument against technical education has been well laid out. It has become the conventional rut of thought of much of the Western World, Nigeria being no exception. The base of the argument is the rendering of training as the antithesis of education. It is held that education deals with the mind or the head and it emanates from the study of liberal arts while training deals with the hands in the acquisition of work techniques. As educated man is supposed to be superior to his techniques as he has in the process acquired scholarship and sensibility, a mind which by virtue of its acquired potential for understanding can function in novel situations to its advantage. As in most societies, this class of people(the educated elite) in Nigeria use their socially ascribed intellectual attributes to allocate social privileges, favourable career and lifestyle prospects to themselves and to the detriment of technically trained.

4.4 Before the on-going Fedral Government intervention in technical and vocational education, many a young Nigerian who enters the channel of technical or vocational education finishes up in cul-de-sac, a dead-end. The lingering antithetical historical effects of liberal education has brought into technical and vocational education quite a number of adaptation phenomena. Among such phenomena are:

a. restructured curricula that have substantial components of liberal (general)education for the inculcation of the attributes of the liberally educated;

b. a tendency towards academic drift to acquire social and intellectual prestige of liberal education;

c. the apeing of the academic norms of liberal arts education to minimise differences;

d. intense struggle for parity, social and professional recognition.

4.5 Other problem areas in Nigeria's technical and vocational education include poor funding, low management capacity of the operators, nature of programmes being terminal rather than developmental, inadequate staffing and general poor facilities.

4.6 All significant problems of technical and vocational education in Nigeria seem to hinge on funding, staffing and management. Nigeria is still in search of adequate solutions to these three problem areas. There is the realization that this type of education is capital intensive and that Government alone cannot bear its funding. Yet it has not been possible to obtain significant cooperation in funding from the private business who utilize the products of technical and vocational education. In regard to staffing, the Federal Government faces two issues: lack of adequate local training capacity and poaching of trained staff by commerce and industry. Nevertheless, efforts are on to generate the teaching staff for technical and vocational institutions using local tertiary institutions who have the requistie training capacity. The Federal Government also knows that education system management is a form of technology which requires development. Over the years it has cooperated effectively with friendly countries abroad on managerial capacity building. This cooperation would continue to be maintained in the years to come.

5. The Future of Technical and Vocational Education in Nigeria.

5.1 The future of technical and vocational education is secure and bright as it has acquired its place as a standard dimension in the national economic development efforts. The end of the value crisis between utilitarian and liberal education is in sight as the two aspects are now merging in curriculum construction. Moreover, as productivity and purchasing power are fast becoming the attributes of the technically educated, so shall social recognition swing from the generalist. The significant innovations that the Federal Government has already brought to bear in order to improve the future of technical and vocational education include the following:

a. establishment of more technical and vocational education institutions;

b. programmes accreditation;

c. increased funding;

d. professionalization of the civil service;

e. general improvement of service conditions for technical workers;

f. service deregulation and the basing of remuneration on productivity;

g. effective management and control through adequate institutional arrangements;

h. more governmental recognition being given to technical and vocational education.

5.2 With the on-going innovations, technical and vocational education have assumed its great role in producing:

a. competent workers in various occupations required by the economy;

b. citizens of Nigeria who are committed to the realization of national aspirations; and

c. self-realizing beings in the direction of their talents.

In the context of the above roles, a technical or vocational education programme must aim at the development of the "complete man" at each stage of life. It does not discriminate between education of the "head" and training of the " hand" for the making of a clever person. The production of competent men and women, who can advance the economic fortunes of the respective countries, is the end result of technical and vocational education.

APPENDIX:

Nigerian Technical and Vocational Education Structure in the 6-3-3-4 System of Education

TECHNICAL AND VOCATIONAL EDUCATION AND MODERNIZATION

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BACKGROUND:

Islamic Republic of Pakistan emerged as an independent State in 1947. Stretching over an area of 796,095 square miles, Pakistan has four provinces namely, Punjab, Sinned, North West Frontier Province, Baluchistan and the Federally Administered Area. There are 20 Divisions, 87 Districts, 320 Tehsils/Talukas, 3,996 Union Councils and 43,963 villages in the country. Pakistan is the world's ninth populous country (estimated at 120 millions in 1990), where about 97% of the population is Muslim. It works for the ideals of peace, security and progress as an active member of the United Nation (UN), Non Aligned Movement (NAM), Organization of Islamic Conference (OIC), South Asian Association of Regional Cooperation (SAARC) and Economic Cooperation Organization (ECO). About 70% of its population lives in the rural areas and 30% in. the urban areas. 24.6% of population is in age group 15-29 years. Its G.N.P. (1989) is US$ 40 billion, GNP per capita (US$) is 370, while its expenditure on Education as % of GNP is 2.2.

There are about 7.76 million students enrolled at Its level of education, 2.93 million at 2nd level-general, 0.06 million at 2nd level in technical/vocational education while enrollment at 3rd level of education is 0.58 million. The participation rate of primary school going children is 64%, middle school is 30% and in secondary education is only 17%. Participation rate for female in rural areas is however much below national norms. Drop out rate at primary level has estimated as 50% with most severe impact in rural Baluchistan Province for girls at 93%. At secondary education the drop out rate is around 40%. Compared with the recent massive input to primary education, literacy in. Pakistan presents a most appalling picture. The literacy rate is 26% which is among the lowest in the world.

1. Role and Function of Technical and Vocational Education in the National Socio-economic Development.

1.1 Several studies conducted during the last three decades have demonstrated that the provision of physical capital alone is not a sufficient condition for structural socio-economic development unless it is reinforced with proper supply of scientific and technical manpower. The number of people employed, specially the competencies and skills possessed by the work force, contribute substantially to development. In view of this, there is a strong realization among developing countries to lay more emphasis on HRD aspect of investment. This is specially true for investment in primary education, investment in secondary education (particularly science and mathematics), improving public training and encouraging private sector training. Generally speaking, investment in human capital was seen as the traditional supply side of HRD, but the recent emphasis on relating it with employment goal has brought into sharp forces the crucial role of "demand side" into play towards optimal utilization of human recourses.

1.2 Rapid economic growth demands that manpower trained in professions and technologies aligned with national development requirements to assume development responsibilities at levels corresponding to their knowledge, competencies and skills at various tiers of public and private sectors. In this context scientists, engineers, technologists, technicians, craftsmen and skilled work force play key role. Therefore, special emphasis needs to be placed on the education and training of scientists, engineers, technologists, technicians and skilled work force to ensure integrated development efforts for national development in the fast changing world.

1.3 Modern science and technology have created a new relationships between man and his work and between work and Education thus placing education in a unique position between man and his world of work. This necessitates that educational planning be so designed to enable it to answer such crucial problems such as, of poverty, food and shelter, health care, unemployment, under employment, and inequity among sexes etc. This objective can be achieved through a well planned and well designed educational system linked with present socio-economic needs of the society, future world of work, and built-in mechanism for continuous change vis-a-vis future needs of the industry and society. Against this scenario, let us analyze the role and functions of TEVT in developed and developing countries.

1.4 Role of TEVT in developed countries:

1.4.1 Just as there is a general agreement the world over that human resources are required to develop and use capital and technology and technical education and vocational training (TEVT) is an important tool of economic development as is fixed capital, TEVT is seen as a gradual widening of choice in provision of education. Opinions have widely varied on the kind of education considered to be most practical. In the western world it is provided in a variety of ways and modes, depending upon their concept of what is most practical education, which varies from country to country. However, in the minds of educators all over the world, TEVT is justified on any one or combination of the following grounds:-

i) To meet the economic demands of the labor market by providing sufficient practice in manual skills so that school leavers would be in an advantaged position when trying to earn living.

ii) To generate vocational interests so that they might continue to pursue these tasks during leisure time (not necessarily for profit motive). This would hopefully enable them to develop well rounded personality.

iii) To develop positive attitude toward manual work against widely perceived notion of manual work as a second rate task requiring less intelligence than academically oriented tasks.

1.4.2 The progress of TEVT varies from country to country. In England, after 11 year of Education, students proceed to 'A' level (for Sixth Form (grade-12) leading to higher education or 'TEVT' Programme. There are specialized grammar schools (for university) and vocational schools (which are terminal). In Italy, after five years of Primary school and three years of Scuola media, students enter either general secondary school, Institute technic, and Institute professional offering 3-years courses leading to employment or 5 year courses leading to the occupational matriculation. In West Germany, after four years of Primary schooling, students choose between Gymnasium (nine years leading to higher Education), great schule leading to higher Technical Education. Real schule or hauptchule both for five years leading to full time vocational training or part time (Berufsfachshulen) under dual system. In Sweden, students choose TEVT after nine years of compulsory schooling. In the U.S.A., all youth are enrolled and all have access to higher education. There are no terminal institutions in the European sense. Thus according to American belief, all subjects are necessary and that all subjects are appropriate in all schools. It is important to note that Vocational training/Education is provided as early as the lower secondary level and that all systems provide access to higher education.

1.4.3 In Summary, TEVT policies in developed countries are based on a concern for young persons leaving compulsory schooling. Equity and social factors are important policy considerations. Attempts are made to provide equal chances, wide range of training options and opportunities for individuals to leave the education and training systems at various point and to return to higher qualifications at a later stage. There are serious attempts to equip every one with some kind of training qualification in an occupation. Some pre-employment skill training is considered better than none. TEVT is provided over at the lower secondary level. Education and Training are being combined and more training is provided in schools.

1.5 Role of TEVT in Developing Asian Countries:

1.5.1 To appreciate the insurmountable problems developing countries in the Asian Region are facing in the development of TEVT, an insight into their demographic, educational and economic feature is necessary. According to UNESCO statistics (1986), a large number of countries in Asia had achieved universal or near universal primary education except Afghanistan, Pakistan, Papua new Guinea and Bangladesh. At the secondary level participation rates are highest for Korea (80%). Singapore, Philippines and Sri Lanka have rates between 60 to 80 percent, while Malaysia and Fiji nearly 60 percent. The lowest rates are in Bhutan, Laos, Bangladesh, Pakistan and Nepal. At the tertiary level, the Philippines has the highest percentage enrolled (38 percent), followed by the Republic of Korea and Thailand, while the lowest percentage is found in the Fiji, Sri Lanka, Bangladesh, Pakistan and Nepal. About 618 Million illiterates men and women aged 15 year and above live in Asia and the pacific Region. This represents about 75 percent of the total illiterate adult population of the world. Countries which have achieved literacy rate of 80 percent or higher are the Republic of Korea, Philippines, Singapore, Sri Lanka and Thailand.

Illiteracy and low levels of primary and secondary education affect equity and efficiency in the production of income. Wastage in the form of repetition and dropouts is a serious problem in a number of countries. Coupled with this is the problem of low female enrollment at the primary level ranging from 30 to 40 percent in Bangladesh, Papua New Guinea, India, Pakistan, Bhutan and Nepal. Secondary enrolments ratios reflect a similar pattern with the lowest percentage (1986) around 18 to 25 percent in Pakistan, Bangladesh and Nepal. Faced with such weak educational base, countries in the region, face multiple tasks to improve their primary, secondary and TEVT sectors. The proportion of secondary school students in TEVT Programme in Asia is also low. UNESCO statistics indicates that in 1986, TEVT's share of secondary education was less than two percent in Bangladesh, Burma, Malaysia, Pakistan, Sri Lanka and less than 10 percent in most other countries of the Region.

As far as economy is concerned, in 1980, two thirds of all the people below the poverty line were in Asia with the majority in South Asia. More than 600 million of Asians' live in absolute poverty today. This indicates direct correlation between poverty and low levels of education and between education and economic performance. Public expenditure on education as a percentage of GNP are also low in most countries in the region, averaging (1980 figures), from 2.1 percent in Pakistan, 2.8 percent in China, 3.2 percent in India, 6.2 percent in Malaysia. In 1984, developing countries in Asia spent an average of 4.5 percent of their total GNP on education compared with 6.1 percent in developed countries which spent 556 billions, more than 10 times the amount the developing countries in Asia spent on education. The proportion of government expenditure allocated to education also varied widely ranging with Korea and Malaysia providing the highest at 27.3 percent and Pakistan and the Philippines the lowest around 5 to7 percent. In 1990, Pakistan spent about 2.1% GNP compared with Philippines, 2.5%, Korea 4.9%, Australia 6.5%. As a percentage of National budget, Pakistan allocates 6% to education while Philippines, Korea and Australia spend 16%, 28% and 27% respectively.

In the countries of Asia, the objective of training at craftsman level is to provide skilled or middle level workers required for economic development. Students generally enter technical and vocational schools after completing lower secondary education while drop outs enroll in non-formal training programmes later on. Generally, students entering vocational programmes pursue these programmes in normal schools or in separate vocational schools. Some countries (e.g. China, Indonesia, Malaysia and South Korea) have both programmes. Pre-vocational programmes are often not well defined and the objectives are not very clear. It is more costly to provide pre-vocational education but its role is being increasingly realized as in Western countries although its formulation, management and implementation are weak. In the Philippines, a new pre-vocational subject called 'life-skills' with similar aim is being introduced. Malaysia also introduced life skills recently. This form of pre-vocational education is less expensive but is too early to say if it will be successful. Despite the mixed success in pre-vocational education, countries are expanding the programme. These countries are faced with high literacy and drop out rates and large number of secondary level graduates leading the schools without any employable skills and flooding the unemployment market. The low level of literacy, the lack of employment opportunities, and large number of general education graduates without any skills are draining human resources development. It is felt that it is better to have some vocational skills than mere general education skills, especially in dominantly rural settings where some pre-vocational skills can be useful in the life of the individual and the community. This thinking is similar to the view of the European countries that some pre-employment skill training is better than none. Thus, pre-vocational education would enable the students to seek out employment or be self employed. It will also address the dropout problems. These views are shared by West European countries which are also providing more of such programmes to prepare students for the world of work. Unfortunately, the biggest problem developing countries are facing is that they do not have the necessary resources -funds, technical know-how, personnel, management skills and requisite facilities to make pre-vocational education click.

Pakistan like other developing countries, face multiple challenges of a) poverty alleviation, b) unemployment and under employment, c) retention of students at primary and secondary education levels, d) illiteracy, e) low public expenditure on education as percentage of GNP (2.1%), and the proportion of government expenditure allocated to education (5%). Against these heavy odds, it is widely believed that TEVT is needed to a) make academic oriented education, more meaningful, purposeful and practical, b) to meet the economic demands of the labour market by providing manual skills so that students leaving school should have acquired some skills to work with, c) to develop positive attitudes towards manual work against widely perceived notion of manual work being done by these who are less intelligent, d) better employment to equip with certain skills to enable them to be absorbed in national economy as useful citizens and finally to provide a solid foundation for socio-economic development of the country.

2. The Role and Function Participating Mechanism of Enterprise in Technical and Vocational Education:

2.1 Countries doing well economically invest more in education, which makes them yet more competent in the market place. But correlation is not a simple one. Some countries, like Britain, spend a lot on public education but have little to show for it (see Chart-1). Others, like France and West Germany, spend relatively less but manage some what better. A more accurate predictor of economic success is not education budgets, but the age to which pupils stay on at school and the percentage of them do so. A series of OECD documents suggests that countries scoring top marks, in keeping pupils in school from 16 to 19 years of age tend to be top of the economic class as well. We find that after Japan came America, Holland and three German speaking countries of Austria, West Germany and Switzerland (see Chart-2). Bottom of the class were Portugal, Spain and Britain. In short, it pays to have either broad based educational system, (e.g. America and Japan) or highly vocational one, (West Germany and Switzerland), but certainly nothing in between. It is the countries that do neither, or do both badly, that falter.

The second component in the training equation - government run manpower agencies - is a fairly recent innovation. Most of these agencies are designed to get millions off the unemployment register as fast as possible. Most manpower programmes have concentrated under 25 year olds because this is where the highest rates of unemployment are to be found. Also the pay off (spread over 35 years or more) is commensurately larger. Practically all manpower schemes designed are strictly for people out of work. Two different approaches to manpower development are emerging. In German speaking countries, where rates of unemployment are relatively low, the focus is on dual arrangement of apprenticeship training and vocational education. The same is true in Japan, where the authorities have not felt the need to do any thing other than pour more cash into the country's soundly based secondary education system. America has succeeded in integrating, its manpower programmes with senior classes at high schools across the country. However, in countries with high unemployment, the response has been different. In countries most seriously affected (Britain, Italy and Australia), it was basically an admission of the failure of secondary schooling that spurred authorities into action. As a result, manpower training was put firmly in the hands of employment (rather than education) Ministries. When Australia Launched its training system, the community youth support scheme, it deliberately set it outside the education bureaucracy. The Youth Training Scheme run by Manpower Services Commission in Britain is also fast evolving into a separate company- based "School System" on its own. In the past year YTS has started taking up to half of the rejects i.e. 86% of 16 year olds, (not staying in at school to study for university or college entrance) and trying to prepare them for the outside world.

Three out of four in America, Britain and Japan have adult training programme of their own. So companies in all the three countries share the same commitment to raising the quality of the employees. For years, Manpower surveys have asked the wrong questions. The issue for corporate training - the third component in the employment equation, linking secondary schools, manpower agencies and private enterprise - is not whether firms do it, but how much they do, what type they do and how well they do it. The Company-based training system responsible for Japan's post war economic miracle revolves round the concept of the flexible worker. The aim is to prepare employee for not one job, but at least fir two or possibly three and then carry on retraining them throughout their working lives. For Japanese firms offering employment for life, the investment is readily justified. Training costs that cannot be set against a Japan firm's taxes are mostly passed on to customers. Training in West German companies is dominated by the apprenticeship system which absorbs almost 70% of all school leavers. Firms have to pay two-thirds of the cost of sending them to school for one day a week, as well as all their own in-house costs. Such payments can be set against tax rebate.

2.2 In most development countries, there are two main models - the institution-based model and the apprenticeship model, while a third model, the enterprise-based training model is emerging. The most dominant mode of training in these countries is the institution-based model, although other modes of training also exist alongside in every country. There is a strong public non-formal sector is institution based in Nepal, Philippines, Burma, Fiji, Indonesia, Korea, Malaysia, Papua New Guinea, Sri Lanka, Singapore, Thailand and India. In countries (e.g. India and Korea), where the education base is widening, technical and vocational education is shifting gradually from the secondary to the post-secondary level to meet the needs for higher skill requirements. The share of secondary level TEVT is the lowest in Pakistan with only 0.8% compared with 18% in the Philippines, 29% in Korea and 50% in Australia.

Many of the programmes offered in the non-formal sector are also institution-based especially those provided by the Ministry of Labour, Manpower and Employment. Institution based TEVT's are also provided in a few enterprises. These programmes consist of on the job based training for specific functions or production process. A variety of courses ranging from six months to two years are provided generally in Industrial Training Institution of the Ministry of Labour. In the Philippines the National Manpower Youth Council (NMYC) trains about 90,000 out of school youths annually. In Thailand, the Ministry of Education (through its department of non-formal education) and the Ministry of Interior provide skills training to school dropouts and others.

2.3 As far as enterprise training is concerned it is not a common feature in developing countries as opposed to developed countries, but some large industrial firms make substantial investment in manpower development and conduct in-house training programmes for their staff. However, in most cases the purpose of these programmes is mere in-service training rather than pre-employment training. In Pakistan, the role of enterprise in the development of Technical and Vocational Education is not very encouraging. The development of Vocational Training in state enterprises, private companies and private sector institutions in the TEVT system in Pakistan has been subjected to a number of pressures; few of which have contributed to its improvement. The support for involvement by and from employers, societies, philanthropic organizations, religious groups has fluctuated due to the shifts in political direction and the changes to the amount and extent of financial allocation provided. This system has also been subjected to a number of shifts in direction, some brought about publicly and others by direct result of the economic condition of the country. Prior to 1972, a large number of private schools/institutions (3000) were operating, which were financed from a variety of sources and, following the decision to nationalize them, only a small number (4%) retained their autonomy. This had the net result of shifting the growth of privately financed education and training institutions, and threw an additional burden onto the Government who had expected to have funds available to improve the pressure on primary education at that time. When the opportunity to reintroduce the private education and training system was presented in 1979, the response in the TEVT sector was limited and to date it appears to be concentrated in the commercial, business and language training areas. Technical/Industrial Training Schools are not prominent. This is most likely due to the high capital cost which is exacerbated by the lack of suitable assistance from the Government to encourage development.

2.4 In Pakistan, Apprenticeship Ordinance (1962), was enacted to involve industries in industrial training. Ministry of Labour and Manpower at the Federal level and departments of labour and Manpower in provinces were entrusted to regulate this scheme. It was experienced that proper facilities for basic training as well as theoretical instructions to the apprentices were not made available in small and medium sized enterprises. This was perhaps due to heavy expenditure necessary for machinery and industrial staff. Thus the apprentices under training neither required skill nor motivation. The private sector companies do not appear to be committed to the Apprenticeship Ordinance for number of valid reasons. Firstly they can have people from a number of sources and have them work at lower cost in indenturable trades with complete immunity to the Apprenticeship Ordinance. As for incentives, the current amounts of tax concession are considered too small to bother with. The alternative to tax concession may be to consider providing bonuses to those companies that produce qualified apprentices i.e. those who complete indenture, whether they are offered jobs or not. Employers who have the capacity to train and do not do so should be levied. The system of apprenticeship Act which has been adequately structured in various provinces need to be developed further. In my opinion the apprenticeship system is the most economic and technically sound method of producing good quality trade people. In this direction a number of steps has been taken in Pakistan:

Opening of TEVT Institutions by Private Enterprises:

In order to compel the private sector industry/enterprises to play their role in the development of TEVT institutions, in pursuance of the announcement by the Finance Minister during his budget speech of 1992-93 a scheme is under consideration of the Government which interalia involves that any industry with paid up capital over Rs.250 million shall establish and run a technical school. In case the enterprise is not willing to establish an institution themselves, they shall pay Rs0.6 million as development cost in three yearly installments and then pay regular recurring cost to the Government to maintain the institution. The Education Policy (1992) lays great emphasis on involvement of the private sector in the education. A number of incentives such as soft loans, tax rebates, duty free import of training equipment, allotment of Government land at reduced cost for educational institutions etc. alongwith softening of Government regulations to encourage establishment of educational/training institutions has been proposed in the Education Policy.

3. Source of Funds and Teaching Staff concerning Technical and Vocational Education in Pakistan:

3.1 The Federal Ministry of Education has overall responsibility for primary, secondary (including Technical Education) and higher education in Pakistan. It shares the cost of financing education with the four Provincial Governments - Punjab, Sindh, North West Frontier and Baluchistan. Likewise Ministry of Labour, Manpower and Overseas Pakistani alongwith the Provincial Labour and Manpower Departments has overall responsibility for training skilled workers.

3.2 The financial support to the technical and vocational education in Pakistan has mostly been from the Government, which as a whole has been very low. Pakistan being a poor and developing country, faces a number of unusual problems and has not been able to give the priority to its education sector which it deserves. As a percentage of the budget, the allocations have ranged between 4.8% and 7.6%. As a percentage of GNP it was 2.1% in 1991, making Pakistan the second lowest among 28 countries of Asia and Pacific. The Philippines with a large and well developed private education sector spends corresponding figure of 20% and 4.4% for developing countries. The Iqra surcharge levied since 1985, at the rate of 5% as a measure to generate additional revenue for education sub-sector, particularly for literacy programmes had the annual receipt varied between US$ 0.2 million to US$ 0.4 million. However, this fund has not been formally created as a separate entity for educational expenditure. The return from users of education in the form of fees is no more than 5% at the secondary level and 1.5% at the higher secondary, technical and vocational levels. The investment in education of the private sector is minimal and mostly in urban areas.

Budgetary support for technical and vocational education have not kept pace with the desired expansions and improvements. These courses by their very nature, are more expensive than those of the general education. Government has planned through the National Education Policy (1992) to increase the financial allocations for Technical and Vocational Education. As for example, the Government is to gradually increase the financial allocations to education from 2.1% (present position) to 4.5% of the GNP. Obviously the allocations for Technical and Vocational allocations shall also be increased substantially. The Government is undertaking the following strategy to mobilize resources:-

i) The total budgetary allocations will be released right in the beginning of the financial year to ensure its proper and careful utilization during the year.

ii) The authority for re-appropriation of funds would be transferred downwards to the administrative heads, instead of the Provincial Finance Departments.

iii) Generation of funds would be encouraged at the institutional level without diluting the standards of training.

iv) Fee structures and user charges at the secondary and post-secondary level be revised and rationalized to get more contribution from the beneficiaries.

v) Double shift system of education and training be expanded where it is not adopted so far.

vi) A reasonable Tax rebate will be granted to private sector for setting up educational institutions.

vii) Grant-in-aid be provided to good private Technical and Vocational Institutions for their help and incentives.

viii) Financial assistance be provided to those individuals and enterprises engaged in research and innovations in Technical and Vocational Education Programmes for procuring equipment, books and other inputs.

As far as teaching staff is concerned, there are 4 levels of teachers and instructors engaged in Technical and Vocational Institutes. These are (i) Chief Instructor or Head of Technology/Trade Department, (ii) Senior Instructor, (iii) instructor and (iv) Junior Instructor. Appointment to the posts of Junior Instructors are made through open competition in conformity with prescribed qualifications and experience. Appointments on all other teaching and training posts are made 50% on promotion to next higher post and 50% by open competition and fulfillment of prescribed conditions on qualifications and experience. There is an acute shortage of professionally qualified, motivated and committed teachers. About 40% of the senior positions in Polytechnic Institutes remain vacant for want of properly qualified staff.

Short courses and 10-month Diploma in Technical Teacher Training Programme is offered to in-service teachers by the Technical Teachers Training Wings of Provincial Education Departments and the National Technical Teachers Training College, Islamabad operating under the Ministry of Education. These courses have appropriate mixes of subject matter, pedagogy and practical training and project preparation are in addition to the class/shop activities. Teachers get full salary, substantial training allowance, traveling expenses and benefits of services period during their training programme.

The salary structure of teachers/instructors teaching in technical and vocational training institutions ranges between Rs.2000 to 9000 per month, inclusive of all type of allowances. The Principal of Government College of Technology or Commerce receives a total remuneration of basic salary of BPS-19 between Rs.9000 = US$ 350 per month. With regard to the career structure and promotion prospects, teachers and instructors are generally not happy about the TEVT system of promotion and career structure, because the system links promotion to vacancies in particular institution and there is no built-in promotion system directly linked with length of experience, performance and in-service training. Then there are less promotion opportunities in certain type of institutions even for those teachers having same type of qualifications and experience.

4. Level, System of Schooling and Management concerning Technical and Vocational Education in Pakistan

4.1 General System of Education:

In Pakistan the general education system (Grade-I to Grade-XII) is based on a four-tier structure, namely, Primary (5 years); Middle School (3 years); High School (2 years) and Intermediate College (2 years). General Education is free up to Primary education. The selection points in the general education system are Grade-VIII, X and XII. Students completing Grade-XII (12 years schooling/Intermediate College) can enter either an Engineering College or Medical College, Degree College or a Lower Secondary Teacher Training College.

4.2 Technical and Vocational Education System :

Pakistan inherited a system of education which was quite inadequate and incompatible with its requirements and aspiration as a free nation. At the time of independence technician level courses were offered as part facility by two colleges of Engineering. Technical Education as separate stream was started in mid-50's with the establishment of two polytechnics. Over the last forty six years or so technician education has undergone expansion at a reasonable pace and presently a good infrastructure is available to look after technician education. Technical and Vocational Education and Training is being offered in Pakistan at the following four levels:

4.2.1 Pre-Vocational as Part of General Education:

Being offered as Agro-technical scheme of studies at Middle and Secondary level with the aim of providing Technical Orientation to General Education System. Subjects offered at classes 6th - 8th are Industrial Arts (Wood Work, Metal Work and Electricity Agriculture for Boys and Home Economics for Girls). Vocational subjects are offered at Classes IX-X.

4.2.2 Vocational Courses:

Vocational courses offered to both Men and Women for employment as skilled craftsmen. These courses lead to certificate for students of Vocational and Commercial Institutes both in Public and Private Sector. Main required entry qualification for such courses are middle pass.

4.2.3 Technical Courses:

Preparing Men and Women for post-matric diploma in Technician and Commercial Education in about 25 vocations for employment as supervisors. The courses offered by College of Technology and Polytechnics lead to Diploma of Associate Engineer and those offered at Commercial Institutes lead to Certificate in Commerce and Diploma in Commerce.

4.2.4 B.Tech Pass/B.Tech (Hons):

Sandwich type courses for diploma holders offered by Colleges of Technologies leading to the award of degree of Bachelor of Technology. B.Tech (Pass) in two year past diploma course. It involves one year supervised training in the relevant field and one year classroom instructions . The B. Tech (Pass) after another two years training i.e. one year iin the job training and ona year class-room instructions are awarded B.Tech (Hons) degree by the respective Universities of Engineering and Technology.

4.3 The present education set up representing all tiers of education and training in Pakistan is shown in the attached diagram (Annex-A). At present 41 Polytechnics and 9 Colleges of Technology are offering Diploma of Associate Engineers in about 22 technologies whereas Colleges of Technology are offering B.Tech (Pass)/B.Tech (Hons) courses as well in addition to Diploma of DAE. For providing skilled level training to youth, 385 Vocational Institutes are functioning in the country both in formal and non-formal sector. The Government has been making concerted efforts for the quantitative and qualitative improvement of technical education. The new National Education Policy recently announced places a great emphasis on the expansion and promotion of technical education.

For Technical and Vocational Education System, first bifurcation in general education system takes place at the end of class-VII when the students go for one or two years courses in vocational trades. The second bifurcation takes place at the end of class-X when the students go for 3 years technology diploma course, known as the "Diploma of Associate Engineers" (DAE). Some students after DAE continue for two years B.Tech (Pass) and for another four years B.Tech (Hons) courses. A pass out of the Polytechnic Diploma course can also get admission to the B.Sc. Engineering Degree course against limited reserved seats.

4.4 Administration and Management of Education:

4.4.1 According to the Constitution of Pakistan, the general policy planning and overall guidelines (including curricula, textbooks and standards of education) are the responsibility of the Federal Government whereas implementation of the policy, programmes and projects rest with the Provincial Governments. The Ministry of Education (MOE) at the Federal level is responsible for curricula for all types of education up to high secondary level including TEVT. In the Public Sector TEVT is implemented by the Provincial Government through their Directorates of Technical Education (DTE). The Boards of Technical Education conduct examinations and issue certificates/diploma from the institutions under Education Departments as well as to the private institutions affiliated/registered with the Boards.

4.4.2 Provincial Directorates of Manpower Training and some other agencies for the Public Sector run their own vocational training programmes. The National Training Bureau (NTB) and the Provincial Training Boards (PTBs) hold their examinations and issue certificates. The Federal Government was responsible for the implementation of vocational/training programmes until 1962, when the Apprenticeship Training Ordinance was enacted. Subsequently, training was formalized and responsibility for implementation was transferred to the Provincial Governments. In March 1980, the National Training Board (NTB), as a statutory body and the four Provincial Training Boards with the labour department of each province were established. The NTB is chaired by the Federal Minister for Labour and Manpower and Overseas Pakistanis' and consists of members drawn from Federal Ministries (including Ministry of Education), provincial departments and directorates, employer organizations and labour organizations.

REFERENCES

1. Encyclopaedia Britannica - 1990 Book of the year.

2. World Bank Policy Paper on 'Vocational and Technical Education and Training' Education and Employment Division, The World Bank 1991, Washington D.C. USA.

3. Ilyas, M. "Science Education for twenty first century", a paper presented at the 22nd Annual Convention of the Institute of Electrical Engineers, Pakistan 1992, Lahore.

4. The Economist, December, 1986.

5. The Economist, December, 1986.

6. Mazharul Haq Siddiqui and Mohammad Ilyas - Report of the visit of 2-member delegation to the Philippines, Korea and Australia, 1992, Islamabad.

PEOPLE EMPOWERMENT:
A NEW WAY TO LOOK AT TECHNICAL EDUCATION

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Industrialization hinges on sound domestic policies balanced with an export-led, outward-looking economic strategy. And its aim is not only to increase the gross national product but to alleviate poverty and ensure that its benefits will reach the poorest of the poor. The Philippines is catching up in the race among Asian economies to attract foreign investment. Manila considers her cheap, English-speaking and trained manpower as its main drawing card for very much needed investment. "We're acutely aware that we cannot, on our own, generate the capital and the technological skills we need to enable our economy to develop rapidly," President Fidel Ramos said recently.

1. Status of Technical Education

Technical education is an integral part of the education system. The courses build on six years of elementary education and four years of secondary schooling. Technical education is that level of education which forms the skilled workers and the operators, craftsmen and technicians with the appropriate attitudes, knowledge and occupational skills for specific levels of technology. It encompasses most aspects of formal education in the education and training of individuals who elect to enter and make progress in the different technical occupations of the middle level manpower required by the economy.

2. General Characteristics

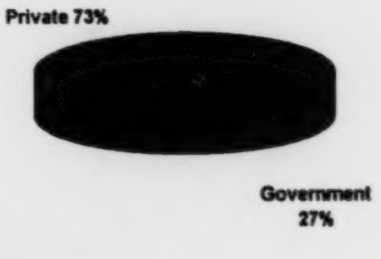
The courses range from six months to three years in duration. The programs are a combination of formally structured and sequenced subject for the acquisition of skills in communication, computations and problem analysis, and technical skills development. Beginning 1988-89 all courses were revised to conform with the competency-based-instruction to meet the demands of specific occupations as required by the economy. In 1991 the job analysis approach to curriculum development was adopted so that all course work were done with the full cooperation of business and industry, and agriculture, as well. Hence, course development is done in close cooperation with industry to match as closely as possible the prequalification of manpower demanded by such industries. The focus of technical education today is on competencies in light engineering, for entrepreneurship and service industries.

3. General Structure

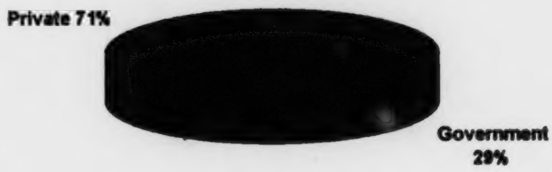
In School Year 1991-92 (Figure No.1), there were 1,261 institutions of which 335 are supervised by the Department of Education, Culture and Sports (DECS) and 926 are privately funded. The largest number (202) are located in the National Capital Region (Metro Manila) followed by 157 in Southern Tagalog, immediately outside of Metro Manila where the highest priority integrated area development project is located. The smallest number (39) are located in the Cordillera Administrative Region whose capital is Baguio City. It must be noted that the private schools operate only in one sector (monosectoral training centers), i.e., trade and industrial education. This constitutes three-fourths of the total number of institutions.

In School Year 1992-93 (Figure No.2), there were 1,103 institutions of which 322 are DECS-supervised and 781 are privately funded. The National Capital Region (NCR) has the largest number with 219 institutions followed by Region IV (Southern Tagalog) with 115. The lowest number with 22 institutions are located in Region IX.

NUMBER OF TECHNICAL AND VOCATIONAL INSTITUTIONS



SY 1994-1992 (Fig. No.1)



SY 1992-1993 (Fig. No. 2)

The teaching staff in technical schools is characterized by a preponderance of the younger age groups and consequently by a relatively low average age:

a. two-thirds of the total teaching force are below 45 years of age;

b. the average age ranges between 37 to 41 years.

A second point which deserves consideration is the distribution of the 13,265 teachers in government schools according to their academic preparation: 11,862 with Bachelors degrees, 1,223 with graduate degrees and 114 with post-graduate degrees, while only 66 had technical certificates. Generally, teachers took up teaching duties directly upon graduation from teachers college. Very few of the technology teachers had industrial experience before entering the teaching profession.

Data gathered from the regional offices show that the total enrollment for School Year 1992-93 (Figure No. 3) was 419,698 of which 366,548 were in private schools while 53,150 were in public schools. It is shown that the largest enrollment (177,998) was in the National Capital Region, which is just logical because the most number of private schools are located in this area. The next largest enrollment was in Region VI in the Visayas, with 45,791 while the smallest enrollment (4,062) was reported by Region XII.

POST SECONDARY ENROLLMENT
SY 1992-1993

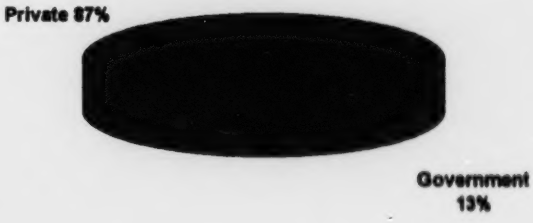


Fig. No. 3

For the present, the enrollment structure shows that it closely adheres to the employment structure; thus in the three-year programs preparing technicians, the demand for such technicians is 5% and the enrollment closely follows this. In like manner, in the two-year courses preparing lower technicians where the demand is 38%, this is the figure of the total enrollment for the preparation of craftsmen. Finally, in the one-year courses preparing operators and semi-skilled manpower where the demand is 60%, the enrollment is actually close to 60% of the total enrollment. As another basis, the key economic areas identified by the Department of Trade and Industry condition the courses offered on a high priority. Further, the DECS has collaborated with the Department of Labor and Employment to come out with reference figures for intake in a Manpower Plan which is updated annually.

The policy direction of technical education resides in the Secretary of Education, Culture and Sports, from recommendations offered by the Technicall Panel for Technical and Vocational Education, which is made up of elders of the five clusters of mature technologies. To the Bureau of Technical and Vocational Education is delegated the task of monitoring the implementation of programs and the evaluation of the results of such implementation. The national achievement test known as the Technician Competency Skills Test represents the end point of the evaluation scheme while the beginning point is the National Technical and Vocational Education Examination, supplemented by the Technician Admission Test given by the admitting schools.

Completing the control system is the basic accreditation system established under the auspices of the Technical and Vocational

Education Project (TVEP). For schools to qualify to offer post-secondary courses, they should pass the institutional self-assessment. Upon qualifying, they may voluntarily upgrade themselves through various private accrediting associations. Review of the accredited status is done every three years.

4. The Planning and Regulation of Technical Education

Transformation from an agrarian to an industrial economy demands a drastic expansion of technical education. Careful attention is paid to ensure the necessary interaction between academies and industries serviced by the system. Cohesion is achieved at the local level by close cooperation between the vocational schools, the employers, and the workers' organizations.

The goals and objectives of technical education take direction from the Successor Medium Term Development Plan 1993-98 which has two main pillars:

a. people empowerment; and
b. world competitiveness. The sub-sector is totally committed to make a significant contribution in redirecting the content and delivery of manpower development in support of the overarching aim to transform the Philippines into a newly industrialized country (NIC). In essence, it is technical education, through people empowerment, which will unlock the innate abilities of the learners so that they have the employable skills to participate more fully in economic activities.

Policy studies groups have identified ten (10) problems that hinder the country's industrial development and of the ten, three have to do with weak human resources development, and these are:

a. lack of appropriate skills and training;
b. weak capability for science and technology; and
c. lack of entrepreneurial skills. The Development Framework for 1993-98 worked out by government planers seeks, at the end of the Plan period, "a structurally sound agro-industrial base which will be the main source of economic strength and stability toward the employment generation, equitable distribution of wealth and sustainable development."

President Ramos said during our National Congress on Technical and Vocational Education last November that the Philippines ten years ago compared favorably with its neighbors, but now has lagged behind at all fronts. He said that if we do not answer the bell now, we will never be able to get up again, much less win. So we are all aware that we are now in critical times. Technical education must do its share in human resources development if we are to recover economically and socially to join the newly industrialized economies of Asia.

5. Reform in Technical Education in the Philippines

The Australian slogan "National Standards, Local Implementation" applies equally well in the Philippines. The Central Office in Manila sets national minimum competency requirements but the implementation of curricula to meet these minimum requirements is the responsibility of the school heads with the Regional Office providing technical support.

The Bureau of Technical and Vocational Education is the office in Manila which is responsible for the development of technical education, and sets the minimum competency requirements for each course, based on inputs from industry. In order to address the needs of the country for technical manpower, several major developments are being pursued in curriculum development, such as (1) the establishment of the Technical Panel for Technical and Vocational Education, the institutionalized link between industry and academics, providing advice on policy, planning and industry competency standards; (2) the development of industry-driven courses as a result of the partnership with business and industry, to ensure that the program can respond effectively to the changing economic environment and the needs of industry; (3) the refinement of a job analysis approach to curriculum development; (4) the establishment of Curriculum Committees composed of outstanding technical teachers in each technology, to design learning materials to meet the competency standards using strategies most appropriate to the learners' needs; and (5) a strong move towards competency-based modular training to meet short- as well as longer-term demands, in the form of self-contained training modules that allows the learner to put together the materials in all sorts of different ways for pre-employment preparation as well as upgrading or retraining needs.

The most important feature of the new program is the adoption of the Competency-Based Vocational Education (CBVE) Training system wherein a competency framework related to a cluster of occupations as defined by industry standards shall establish the reference point for the acquisition of competencies by students in a self-paced, learner-centered system. Such an approach allows for greater flexibility since the learning process is not time-bound but performance-based. It is designed to suit the individual capabilities of the students where mastery of the tasks and performance standards demanded by the job are the goals and bases for assigning marks. The progress of the students is measured against these standards which are indicated in the performance assessment instrument provided in each learning element . Any student who fails to reach or meet the criteria set for the task to be learned has to repeat the process until the desired level of competence and mastery is attained. The process is repeated as a final check through the Technician Competency Skills Test (CST), a national achievement test conducted at the end of every school year for technician and craftsman levels. In this regard, competency is defined as the ability to complete a trade-related task safely to the performance standard set by industry without direct supervision. Competencies in the new design are classified by levels: the first level of first year as Operator, second level or second year as Craftsman and the third level or third year as Technician. Each level has an equivalent occupational title(s) in which the graduates may be employed. The curricular program is designed in such a way that the student, upon completion of the first level or second level, has the option of going to industry for employment or continuing with the next higher level. Each level, therefore, is sufficiently provided with more hands-on components to accommodate this option. The basic delivery mode shall consist of modules which corresponds to specific job titles, duties, tasks and the corresponding performance criteria to be met.

6. Managing a Competency-based Training Programme: A Design for the Philippines

To achieve her goal of becoming a newly industrialized country by the year 2000, the Philippines must earnestly build up an efficient technical and vocational education and training (TVET) system. She must change her long-lasting bias against blue-collar occupations and not allow the ranks of the untrained and unskilled to swell. The Department of Education, Culture and Sports through the Bureau of Technical and Vocational Education (BTVE) has instituted numerous reforms to tighten the fit between supply and demand, and, more importantly, to raise the quality of technical education to industry standards, thereby attracting those who intend to enter upon the practice of craftsmanship.

7. IMPORTANCE AND NATURE OF PLANNING

Any discussion of management includes essentials of planning which serve as the common thread that runs through all the functions of management. Planning is the process by which a manager looks to the future and discovers alternative courses of action. For our purposes, given the nature of the structure of DECS and the staff function of the

BTVE, this discussion will be on strategic management.

A plan is a predetermined course of action to be taken, relative to a known or set target, including searching for possibilities of future problems that might appear. Plans become premises for decisions to be made in the future.

8. A Model for Strategic Planning

The planning process can be viewed systematically as composed of five elements. Each of these elements are handled by different groups of staff.

8.1. Goals of the Organization are the ultimate ends toward which all activities are aimed.

In this case, the technical education sub-system has adopted as its goal the preparation for entry employment of youth in the middle-level occupations, and the skills upgrading of those who are already practicing.

8.2 Mission of the Organization. Once the goals are identified, the strategic planner seeks to answer the question: "What activities should the organization perform in order to reach its goals?" The mission of an organization is the specific and well-defined roles and activities on which the organization elects to concentrate its efforts; it determines the scope of planned activities. The degrees of specialization and diversification are issues that affect the mission of the organization.

In the case of the technical education sub-system, the elected mission for the next five years is the design of curricula which more closely addresses the needs of industry, particularly in the areas identified where the Philippines has a leading edge. Monitoring the implementation as close to the design as possible will enable the supervisory offices to assist in the closer compliance with set standards to assure an even quality throughout the country.

8.3 Strategy of the Organization. With a clear understanding of its direction (goal) and scope of activities (mission), management needs to select the common approach and alternative directions available for achieving its goals. The choice of a mission is itself a strategic choice, but in addition, management must seek an appropriate group of guidelines for laying out the approach for performing its mission.

Strategy consists of the common approach for facing risks, seizing opportunities, and using the distinctive competencies of the organization.

Good strategic planning depends as much on identifying the critical questions as on attempting to answer them. The following guide questions give us a better idea:

a. What opportunities available in the market?
b. "Distinctive competencies" of the institutions?
c. Constraints in the environment, including government regulations, technological developments, changes in consumer life styles, and cyclical economic consideration?
d. Personal aspirations and interests of administrators and instructors?
e. Society's ethical, political, and cultural framework?

In short, goals answer: "Where are we going?"
Mission answers: "What are we doing?"
Strategies answers: "In what direction are headed and what approaches have we selected?"
Policies provide guides for getting there.

Because the technical education sub-sector is complex, being made up of institutions at three levels (national, regional, institutional) offering diverse programs since they address needs which are just as heterogeneous, and utilizing resources of different kinds.

In the case of technical education, the main strategy chosen is that of Competency-Based Vocational Education implemented preferably utilizing the dual training system. CBVE conditions the content of education while delivery utilizing the dual training system bonds the end-user, i.e., industry, as an equal partner in manpower development.

9. What Future for Technical Education in the Philippines?

In these critical times, and in keeping with the change in government which is fully aware of the importance of technical education, a drastic reorganization of the educational system of the Philippines is being strongly pursued. In the case of technical education, the model being used is that of the Australian TAFE system, wherein formal technical education and apprenticeship shall be a parallel system with non-formal and continuing education. These two offices shall be coordinated by a super body which shall be composed of representatives from business and industry, and the major line agencies which have to do with manpower development, i.e., the Department of Education, Culture and Sports, and the Department of Labor and Employment. It is felt that pushing technical education in a different creative strategic mode and management-leadership approach will facilitate the achievement of sectoral goals. As an example, a mechanism for paying high salaries for talented teachers equivalent to professional salaries paid in the technology area, will attract the best to enter teaching. What happens after that will depend on market forces. Strengthening of structures and policy environment of technical and vocational education and training augurs well for the elevation of this sector as key player in the push for industrialization.

There is a huge potential for expanding our classrooms and shops beyond our wildest imagination through full utilization of educational media. By forcefully, dramatically, and immediately optimizing the vast air time and TV time of our broadcast media -- government and private -- for sweeping, exciting, creative and well-financed programs, done for the masses utilizing the most popular movie stars and personalities with the best and most talented educators, scientists, and engineers, for the education and training of our people.

Then pushing for more funds concentrated into the technical education sub-sector because its output are paraprofessionals and practitioners who can immediately be harnessed as skilled manpower and contributors to national economic growth.

By the year 2000, the TVE with the BTVE at its helm shall have realized the following:

a. Trained middle-level manpower responsive to industry needs and enhanced employability and productivity.

b. Promoted fishery-based agro-industrial entrepreneurship in the country side.

c. Improved the employability and productivity of the Filipino workforce.

d. Raised the Filipino workforce to world-class level.

e. Raised the quality of Philippine products to world competitiveness.

f. Lead the country towards increased productivity and self-reliance.

Human labor is our greatest export. And peso for peso, it will be the best product in the world in terms of earnings and market acceptability. But how to refine, upgrade, improve this human labor -- for export and domestic service -- for our own productive uses -- this is the mandate and challenge to technical education. This is our future.

SUMMARY OF IIRR'S CHINA PROGRAM

by
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1. IIRR's Roots in China

IIRR is the outgrowth of the mass Education Movement that Dr. Y.C. James Yen (1893-1990) and his colleagues started in China in 1923. They established the "Chinese National Association for Mass Education Movement" which started as an innovative literacy program. It later evolved into an integrated "four-fold program" with education, livelihood, health and self-government components to help the farmers and laborers combat the four basic interlocking problems that confronted them, namely illiteracy, poverty, disease and civic inertia.

For 25 years (1924-1949), Dr. Yen implemented the four-fold Rural Reconstruction Program in the provinces of Hebei, Hunan and Sichuan. The National College of Rural Reconstruction was established at Xiemachang, Sichuan province, to train workers for rural reconstruction work.

From China, Dr. Yen extended his rural reconstruction experience to other third world countries. Thus were born the Philippine Rural Reconstruction Movement (PRRM) in 1952, the Guatemala RRM and the Colombia RRM in 1965, the Thailand RRM in 1967, the Ghana RRM in 1972 and the India RRM in 1979. The International Institute of Rural Reconstruction (IIRR) was established in the Philippines by Dr. Yen in 1960 as a research and training center. Through IIRR, the philosophy and principles of rural reconstruction which evolved in China are now being propagated and applied to empower or "release" the potential powers for self-development of millions of poor families in developing countries.

2. Dr. Yen's historic return to China

At the invitation of the National People's Congress (NPC) of China, Dr. Yen made his historic return to China in 1985 after an absence of 36 years to study the progress of China's rural education program. The Rockefeller Brothers Fund provided for the travel expenses to China of Dr. Yen and members of IIRR's senior staff. In 1987, Dr. Yen made a second visit to China to meet with officials of China and many of his former students.

Following Dr. Yen's visit to China in 1985 and 1987, the relationship between and among IIRR, the State Education Commission and other Chinese agencies developed gradually and was strengthened through the following events:

In 1988, a two-week seminar was held at IIRR for 15 Chinese rural development specialists, including members of the Education Committee of NPC, Central Institute of Education Research (CIER), the research arm of State Education Commission and the Alumni Association of the National College of Rural Reconstruction.

In 1990, an international conference on Dr. Yen's philosophy and its applications was held at Shijiazhuang in Hebei province, jointly sponsored by IIRR and CIER. This conference was participated by over 70 scholars and development leaders from China, Philippines, India, United States, Japan and Canada. IIRR's share of expenses was made possible through grants from German Agro-Action, World Bank, Asia Foundation, Starr Foundation, Mrs. Carleton Cooke, Dr. C.Y. Chen, etc.

In May 1991, at the invitation of the State Education Commission (SEDC), Ms. Ping-sheng Yen Chin, Mr. Conrado D. Navarro and Mr. Demetrio J. Imperial of IIRR participated in the International Symposium on rural education held in Tai'an, Shandong province. After the conference, the IIRR members visited three of SEDC's rural experimental counties in Shandong province to learn more about their "integrated reform of rural education."

In September 1991, IIRR invited a group of ten (mayors and educational commissioners from the three counties that hosted IIRR's visit) to a ten-day seminar on IIRR's philosophy and approaches.

These two events in 1991 were made possible through grants from the World Bank, Starr Foundation, Robert Stern, Mrs. Carleton Cooke and Mrs. Elizabeth Leslie.

3. Exchange Program with SEDC and other China group

At the conclusion of the 1991 exchange visits, IIRR and SEDC agreed on a three-year exchange program. The two institutions would take care of the international travel expenses of their own members and the in-country expenses would be paid by the respective hosts. The exchange program with SEDC aims to develop a collaborative program between IIRR and SEDC, whereby IIRR can contribute in some significant way to SEDC's integrated rural education program in its experimental counties and can also learn from their experiences to enhance IIRR's international training program.

With a three-year grant from Starr Foundation, the program moved ahead.

In the summer of 1992, Dr. Juan Flavier, Mr. Greg Par and Mr. Ricardo S. Dayrit of IIRR visited four rural counties (Changping County near Beijing, Changge and Fugo counties in Henan province and Conghua County in Guangdong province) of China. In July 1992, a team of ten from the four counties visited IIRR to learn more about IIRR's programs.

In April 1993, a team of six from IIRR visited Jinghai County near Tianjin and three ethnic minority counties in Guangxi province. In July, 10-12 members from those counties will attend a seminar at IIRR, Philippines.

Another exchange will take place in 1994.

With fellowship from Robert Stern, Mrs. Carleton Cooke, Mr. and Mrs. Frank Chen and other promising prospects, IIRR will invite an additional 10-12 members from other Chinese agencies, involved in rural development, to join the seminar planned for SEDC in 1993 and 1994.

4. Exchange program with Chinese environmental groups

In late 1987, the Rockefeller Brothers Fund (RBF) suggested that it might be worthwhile for IIRR to visit some Chinese institutions engaged in research in sustainable agriculture. Through the encouragement of Rockefeller Brothers Fund, IIRR began an exchange program mainly with the Nanjing Research Institute of Environmental Science.

In September 1988, a three-person team from IIRR led by Dr. Julian Gonsalves made the first of a continuing series of visits to China to prospect for areas of cooperation in agriculture and environment. A two-week visit was hosted by two Chinese research organizations - the Nanjing Institute of Environmental Sciences (NIES) based in Nanjing City, Jiangsu province, and the Zhejiang Provincial Research Institute of Environmental Protection based in Hangzhou. IIRR shared its experiences in low-external input rice production upland rice-based agroecosystem development and technology dissemination strategies particularly the "Barangay Scholars" approach. The Chinese, in turn, related their experiences in biogas, integrated aquaculture, integrated pest management, the recycling of agricultural wastes and other technologies as part of the features of an "ecological farm or community".

In November 1989, IIRR's visit was reciprocated by a five-person delegation representing three organizations - NIES, the Nanjing Municipal Bureau, and the Environmental Protection Institute of Zhejiang province. The delegation was led by Professor Li Zheng-fang of the NIES.

From then on technical exchange visits between institutions in China and IIRR moved on its own momentum.

In 1990, two participants, one from Nanjing Research Institute of Environmental Science and one from the Environmental Protection Institute of Zhejiang province attended the 33rd International Senior Managers Training Course in Rural Reconstruction.

In April 1991, a three-person team from IIRR led by Scott Killough went on a short-term consultancy in China for Winrock Foundation. The mission of the team was to assist three Chinese institutions in documenting their research projects in regenerative agriculture for an English-language Conference to be held in Nanjing.

In October 1991, one participant from Nanjing Research Institute of Environmental Science attended the First International Course on Regenerative Agriculture (ICRA).

In February 1992, four Chinese, three of them from Asia Pacific Regional Research and Training Center for Integrated Fish-Farming and the other one from the Chinese Academy of Agriculture Science joined the ICLARM-IIRR workshop to produce an information kit on rice-fish culture.

In March 1992, a five-person group from Anhui Provincial Scientific Investigation Delegation visited IIRR.

In October 1992, one participant from Chinese Academy of Agriculture Science joined the ICRA.

In 1993, three members from the Nantong Environmental Protection Bureau visited IIRR. They made field visits to IIRR project sites. They also visited different environmental agencies observing technologies and strategies for environmental protection in the Philippines.

In September 1993, there will be another environmental group from Liaoning to visit IIRR.

References:

1. Mr. Conrado D. Navarro: IIRR China Program

2. Mrs. Ping-sheng Yen Chin:
   a. Brief summary of IIRR's China Initiative 1985-1993
   b. Program of Training and Exchange in China 1992-1994

3. Mr. Teodoro Teddy: An overview of IIRR's Activities in Agriculture and Environment with Institutions from PROC

TECHNICAL AND VOCATIONAL EDUCATION IN THE REPUBLIC OF KOREA

by
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1. The Role and Function of Technical and Vocational Education in the National Socio-Economic Development

With the increasing diversification of the industrial structure and the growing sophistication of technology during the last three decades, human resource development was one of the essential elements of economic growth in Korea. In a country like Korea in particular, where natural resources are scarce, how to maximize the utility of the human resource and how to raise its quality are crucially important.

Therefore, government concerned authorities has been emphasizing importance of education especially for technical and vocational education.

There are two main roles and functions of technical and vocational education. The one is that technical and vocational education as general education provides for career awareness and career exploration to the students of elementary and secondary schools. To achieve the objectives, practical Arts at elementary school and Industrial Technology and General Home Economic subjects at secondary schools are offered.

The other one is to train the manpower to meet society's needs for workers. To achieve the objective, many types and levels of technical and vocational institutions from high school level have trained manpower of various kinds and levels of skills, and is credited with contributing of 22.61 percent of the total increase of GNP. This trained manpower has been the major vehicle for advancing technology and higher productivity.

Educational contribution can also be highlighted from the dimension of employable skills, which has led to higher earning. Education has also contributed to economic development by stimulating the industries which produce equipment, aids and materials used in education.

However, objectives, systems, types of programs, content of curriculum degree of emphasis in each school level, roles and functions between formal

education and non formal education for technical and vocational education are different dependent upon stage of industrial development.

As shown on table 1, technical and vocational education emphasized to train craftsman and technician at vocational high school level during the stage of cottage industry and labor industry until the early in 1970s. But during the stage of technology intensive industry and communication and information era which begins at mid 1970s, it emphasized to train technician and technologist at post secondary education, engineer at four year college/university, and workers who will engage in service area at junior vocational college and four year college/university.

Since 1980s, non formal education for technical and vocational education has also been emphasizing to up-grade skills and knowledge of industrial workers.

Education has also contributed to the internalization of new values of the Korean people by providing them future orientation and instilling a sense of commitment to modernization and citizenship. Education has also provided a means of upward mobility through the hierchical order of society based on meritocracy, and the expansion of educational opportunities has made it possible for every member of society to aspire to higher status. From a cultural perspective, education has made efforts toward the rediscovery and appreciation of traditional values in confrontation with the new waves of foreign cultures. Its aim is to establish a new synthesis of Korean culture contributing to national development and the advance of human civilization.

Summary of relationships among the changes of industrial structure, educational attainment by profession, and student enrollment by school level may be shown as Table 1, 2, and 3.

Table 1. Passage of Korean Development

Decade Category	1950	1960	1970	1980	1990	2000	
Per Capita Income		$100 ('63)	$500 ('74)	$1,700 ('81)	$5,500 ('90)		
Social Structure	Agrian Society	Welfare Society Industrial Society Post-Industrial Society					
Industrial Type	Cottage Industry	Labor Intensive Industry		Capital Intensive Industry		Knowledge Intensive Industry	
Export (million dollars)	$100 ('64) $1,000 ('71) $10,000 ('75) $20,000 ('81) $70,000 ('90)						

Industrial Policy	Agricultural	Infra-structure	Light Industry	Infra-structure	Heavy and Chemical Industry	Bioeng-ineering Industry
	Primitive Technology	Intake of Foreign Technology	Modification of Foreign Technology	Development of New Technology	Transfer of Technology	
Manpower Formation	Unskilled Laborer	Skilled Worker	Technician	Technologist	Engineer	Scientist
Educational Emphasis	Primary Education	Secondary Education	Junior College Education	University Education	Graduate Schooling	

Table 2. Student Enrollment by School Level

Year	1970		1980		1990	
School Level	Enrollment	Percentage	Enrollment	Percentage	Enrollment	Percentage
Total	7,874,353	100.0	10,504,618	100.0	11,421,575	100.0
Kindergarten	22,271	0.3	66,433	0.6	414,532	3.6
Elementary School	5,794,301	73.0	5,658,002	53.9	4,868,520	42.6
Middle School	1,318,808	16.7	2,471,997	23.5	2,275,751	19.9
High School	590,382	7.5	1,696,792	16.2	2,283,806	20.0
Post-secondary Institute	40,537	0.5	174,476	1.7	323,825	2.8
College & University	146,414	1.9	402,979	3.8	1,040,166	9.1
Graduate School	6,640	0.1	33,393	0.3	86,911	0.8

Source : MOE, Educational Statistics, 1970-1990

Table 3. Composition of Employed Persons by Industry

Classification Year	Agriculture, Forestry & Fishery	Mining & Manufacturing	SOC & Others	Total %
1970	50.4	14.3	35.3	100
1980	34.0	22.5	43.5	100
1990	18.3	27.3	54.4	100

2. The Role, Function, Participatory Mechanism of Enterprises in Technical Education

The topic may be discussed in terms of school-industry cooperation. School-industry cooperation can be defined as systematic and cooperative relationship between educational institutions and employing organizations for mutual development of education and research through interchange of all available human and material resources.

In the beginning of school-industry cooperation, the cooperation implemented only in the field of technical-vocational area. Nowadays, cooperation is implementing in all subject areas.

Participants of school-industry cooperation are employing organization, educational institutions, and mediate institutions. The role of employing organizations is to provided supervised occupational experience (Table 4 and , work observation, facilities, information and research fund. The role of educational institutions is training manpower, educating industrial personnel, and providing advise or permitting the use of industrial facilities and equipment for education and research. The role of mediate institutions is law making and providing administrative and financial support.

The contents of activities are grouped into cooperation for education and for research development. Cooperation for education includes such activities as supervised occupational experience, curriculum development, employee education. Cooperation for research and development includes such activities as joint research, joint training, consignation of research, and technology development conducted under the cooperative system between educational institutions and industry.

For effective school-industry cooperation, the cooperation should be carried out under the principles of cooperation, mutual benefits, spontaneity, systematic planning, and education oriented.

Table 4. Schools, major Areas and Period of Supervised Occupational Experience by Industrial Education Development Act

School	Major Area	Period
College University Junior College High School	Department of Industry Oriented Field	• College / University and Junior College: 1-3 months • High School: 1- 6 months
	Agriculture	• 1-3 months
	Business	• High School: 1-3 months
	Tourism	• 2 months
	Fishery & Marine Studies	• 1-12 months • *** • Major area

3. Source of Funds and Teaching Staff Concerning Technical and Vocational Education

3.1 Source of Funds

Educational financing is to support education and managerial activities. Therefore, educational financing is the key factor to determine quality of education, educational conditions and commitment to educational reforms.

Educational financing is considered on three levels, namely; central government financing, local government financing, and private education financing. Grants from the Central Government and tuition are the major source of financing education. Noteworthily, contributions from school foundations and the private sector are relatively marginal, compared with those of foreign industries.

3.1.1 Grants from the Central Government

The Major source of financing education by the Central Government is tax revenues. The Central Government covers the expenditures of the Ministry of Education, National Universities, and research institutes and elementary and secondary education incurred by local autonomous governments. The ministry of Education's budget consists of general and special accounts. The former includes current operational costs, grants for local education, and grants and subsidies for national universities and public schools and its subsidiary organizations. The latter includes a special account for the improvement of education conditions, a special educational tax account, a special private education fund account, and special account for national university hospitals.

3.1.2 Financing of Local Education

The financing of local education highlights a heavy reliance on grants and subsidies from the Central Government. The local office of education prepares education budget bills based on estimated needs for providing elementary and secondary education and forwards them to its respective local autonomous body.

Recent changes in financing local education are noteworthy. The time specific educational tax, which was supposed to terminate in 1991, has been revived and has secured its place as permanent source of financing local education. To ensure that educational taxes continue to take effect, a special educational tax account has been created, paving the way to local autonomy. With the new source of financing, local offices of education were given autonomy in preparing their budget bill and spending it. In receiving grants from the central government, the obligation of the local offices of education to clarify what the grants are intended for is waived. Grants are allocated in accordance with an established set of criteria.

To stabilize the financing of local education the central government is responsible for total remuneration of teachers in compulsory education and 11.8 percent of internal tax revenue is earmarked as a grant to local education. Special accounts are institutionalized to set aside a fixed percent of the general account for transfer to local education and to perpetuate educational taxes to the be used for improving educational conditions.

Special accounts for local education in 1991 totals 6,660 billion won, which consists of government grants (5,487.7 bil. won, 82.4%), transfer from local autonomous bodies (386 bil. 5.8%) and self-earned (786.7 bil. 11.8 %). The expenditure consists of remuneration (4,767.3 bil 71.6) operational cost (599.3 bil. 9.0%), facilities (580 bil. 8.7%), subsidies for private education (539.8 bil. 8.1%), and congingency fund and others (173.4 bil. 2.6%).

3.1.3 Financing of private education

The major sources of financing private education are entrance fees and tuition. In terms of students, private schools account for 69.3 percent, 28.6 percent, 61.7 percent and 78.3 percent at kindergartens, primary schools, high schools, and colleges and universities respectively. In terms of schools, private school accounts for 29.8 percent, 86.3 percent 77.5 percent at vocational high school, junior vocational college, colleges/universities respectively. By the proportion occupied by private schools, private schools play vital role in education and deserve government support. So the government has enacted a law exempting private schools from taxation in the acquisition and sales of properties and is providing subsidies and loans to help them with the expansion and renovation of facilities. The subsidies also include scholarships, research grants and partial coverage pensions for private school teachers.

In 1990, the total budget of private schools was 2,661.3 billion won. To break it down by revenue source, entrance fees and tuition account for 69.8 percent, followed by transfer and subsidies 23.5% and others 6.7%. Therefore, financial source of private technical-vocational education is mainly dependent upon tuition and fees.

3.2 Source of Teaching staffs

3.2.1 Classification of Teachers

In order to ensure the professionally and the public accountability of teachers, graduates of teacher training institutes are required to be licensed according to the criteria established by law. Article 79-1 of the Education law classifies teachers and establishes criteria for the classification.

Teachers are classified into teachers (grades 1 and 2),assistant teachers, special education teachers, librarians, teachers responsible for practice of experiment and nuring teachers. In accordance with criteria established by the President, each prospective teacher should be licensed as one of the foregoing by the Minister of Education.

3.2.2 Teacher Education System

Institutes responsible for teacher education vary in type and level, including teacher's colleges, colleges of education, teacher education courses or departments of education in colleges and universities, junior vocational colleges, air and correspondence colleges, and graduate schools of education. Kindergarten teachers are usually produced by junior vocational colleges; elementary school teachers by teacher's colleges; and secondary school teachers by colleges of education and general colleges and universities. These institutions turn out nearly 30,000 teachers annually. Appropriate licenses for teaching are awarded to those who graduate from the above.

Vocational high school teachers must be graduates from colleges of education, departments of agricultural education, technical education, business education, home economic education, or teacher education courses in colleges and universities, or graduate schools of education. At present time, vocational high school teachers are over supplied.

The tuition exemption which had been applied to students of national colleges of education until 1990 was abolished by being made available to 40 percent of the total enrollment. Instead, the entrance examination to colleges of education has become more strict by adding an aptitude test and an interview. Besides the teacher training institutes, colleges and universities offer teacher education to supplement the supply of teachers in secondary schools. This program provides an alternative path for students enrolled for other programs to become a teacher.

Graduate schools of education were established to upgrade the professionally of teachers by providing exposure to research-based, in-depth studies. They offer classes either in daytime or at night and during a designated season so that teachers can attend classes at a time convenient for them.

4. Level, System of Schooling and Management Concerning Technical-Vocational Education

4.1 School Ladder System

The Education Law promulgated in 1949 declares the adoption of school ladder following a singular track of 6-3-3-4. Six years is primary school, three years in middle school, three years in high school and four years in college and university. The provisions of the Education Law, which pertains to the education system, read: "All citizens have the right to receive an education according to his ability; all children should receive at least an elementary education and such education as may be prescribed by law; compulsory education is provided free of charge; the autonomy and political neutrality of education is guaranteed in such manners as shall be prescribed by law; the state is responsible for promoting lifelong education; and basic matters related to the management of systems of school education and life long education, financing of schools, and the status of teachers are prescribed by law.

Article 81 of the Education Law, based on the aforementioned principles stipulates that the following schools be established : 1) primary school, middle school, high school and college and university; 2)teacher's college and college of education; 3) junior college, air and correspondence college and open university, 4)trade school and higher trade school; 5)civic school and higher civic school; 6) special school, 7)kindergarten; and 8) miscellaneous schools.

Among these, the schools in the first category constitute the skeleton of the educational system.

The Education Law establishes the minimum number of the school days for the completion of one academic year: elementary, middle and high school should have more than 220 school days. For tertiary education, 32 weeks are the minimum requirement of school attendance. The Academic year consists of two semesters. The first semester begins on 1 March and ends on 31 August. The second semester spans 1 September and the end of February.

4.2 Technical-Vocational Education System

4.2.1 High School Level

Technical-Vocational education actually begins at high school level.

High schools are divided into academic high schools and vocational high schools. Entrance to high school requires that candidates complete middle school or their equivalent. The three-year courses of study are beyond the sphere of free, compulsory education, where tuition and fees comprise the major source of revenue for schools.

The aim of education in high schools is to give more advanced general and vocational education.

Effective from 1974, a new entrance system has been employed in the areas where high school education has been standardized. According to the new system, a preliminary examination is conducted nationwide to establish the hierarchy of eligibility for admission. In these areas, candidates for vocational high schools are given tests to vie for entrance earlier than tests by academic high schools. Following this, the candidates who had opted for academic high schools and those who failed to obtain entrance to vocational high schools sit for the preliminary examination. Those who have passed this examination are assigned to one of high schools in their respective residential district by computer lottery. In 1989. 96.5 percent of middle school graduates go on to high schools.

a) Academic High School

The academic high school has shown a steady increase in the number of students, and this is due to the ever-increasing demand for higher education. Coming to grade 2, students are split, according to their options, into humanities and social studies, natural sciences, and occupational fields. The majority of students opt for the first two as a preparatory course for entrance to college.

b) Vocational High School

Vocational high schools are of eight types, namely : agricultural, technical, commercial, fishery and maritime. The common denominator of their curricula is liberal education which provides the foundation for specialization. The government has provided incentives for vocational education as the major source of skilled manpower for the rapidly industrializing country. Apart from financial support, the principal of vocational high school enjoys a greater degree of autonomy in recruiting student; within the policy framework, he is allowed to make decisions between student achievement in high school and test scores as the base for determining eligibility.

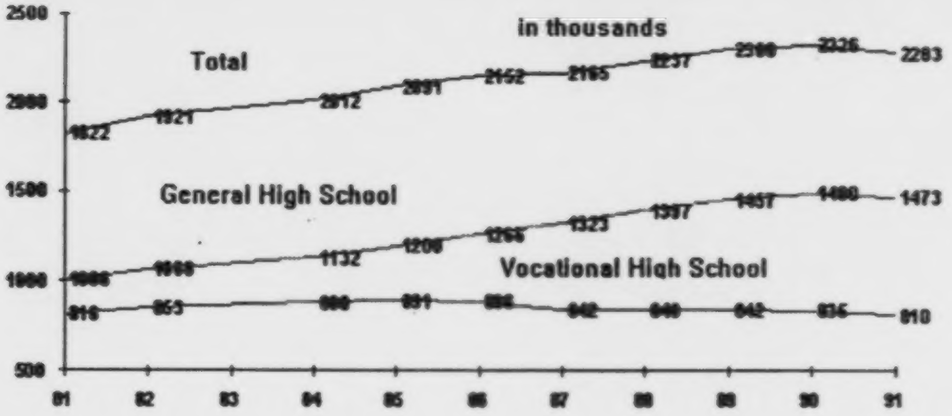


Fig 1. Changing Trend in Enrollment of High School Education

--Agricultural High School

Agriculture lost attractiveness amid the urban migration of rural population and preferred option for skilled work in industries. This trend will continue and rural areas will be hard hit by the shortage of young workers. What is called for is the scientification and mechanization of farming skills.

According to the scheme to promote agricultural development, agricultural education in high school is focused on future cadres directed toward self-managed farming. This aims at encouraging consciousness of agricultural importance and the rational and scientific management of farming. To this end, self-farming courses are installed at 11 agricultural high schools, with experimental programs attached. Candidates for the courses are given incentives in the form of tuition exemption, scholarship, free accommodation and credit loans. Agricultural planning and mechanization are receiving new emphasis as the course to foster future cadres.

--Technical High School

Technical education has changed with industrialization. In the early 1960s, coincidental to the initial stage of economic development programs, technical education catered to the needs of light industries. As the thrust of manufacturing industries was into heavy, chemical industries, technical education had to gear itself to producing manpower, capable of dealing with sophisticated machines. Coming into the 1970s, technological education responded to manpower needs in heavy and chemical industries. Hardly had it shifted emphasis to the new manpower needs, when it had to respond to what was implicated by the rapidly advancing frontiers of technology sweeping the

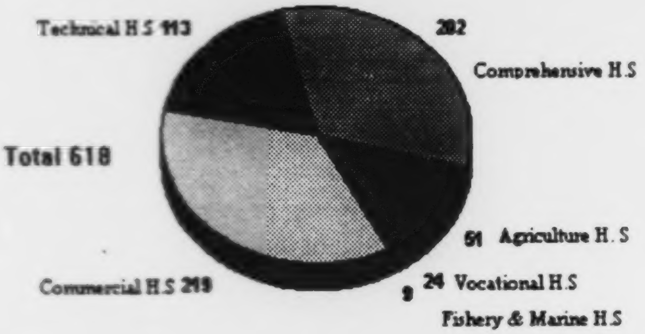
1980s. Heavier weight is given to practical operation of sophisticated machines. The development of technical education was facilitated by seeking to establish a cooperative relation between school and industry.

--Commercial High School

In the past, commercial education was centered around the adding machine, book-keeping and typing which comprised fundamental skills of clerical work. With the advent of information-processing technology, commercial education underwent a drastic change along the line of preparing youngsters for new skills workable in the info-oriented society. Information processing skills, new managerial skills and foreign languages have become an integral part of commercial education.

--Fishery and Maritime High School

There are nine fishery and maritime high schools along the coastline of the Korean peninsula committed to education on the development of marine resources and navigation skills. Six-month on-the-job training is made a requirement for graduation.



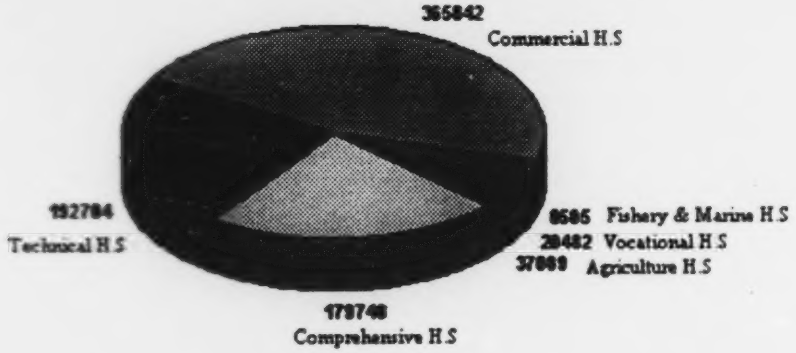


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Fig 2. Distribution of Students in Vocational High Schools by Major Field, 1991

4.2.2 Higher Education

The institutes of higher education are divided into four categories, namely; (1) Colleges and universities with four-year undergraduate programs, with the exception of six-year medical colleges, (2) teacher's colleges and colleges of education, (3) two-year junior colleges, air and correspondence university, and open universities, and (4) others like theological college and seminaries.

Under the Education Law, all higher education institutes, whether public or private, come under the direct and indirect supervision of the Minister of Education. The Ministry of Education exercises control of such matters as student quotas, qualification of teaching staff, curriculum and degree requirements, and so forth. With regard to other matters, universities comply with decisions made by a consortium called "Council for Higher Education", Deans and presidents of national and public universities are appointed by the president on the Minister of Education's recommendation. The president of a private university is elected by the board of trustees, subject to approval by the Minister of Education.

a) Junior Vocational Colleges

Current Status

Junior vocational college is a two-three year post-secondary program leading up to 14th grade lavel and is the direct outgrowth of the increasing demand for technical manpower attendant to rapid industrialization. They are a merger of earlier two-year junior colleges and 2-3 year professional high schools. Since established in 1979, the number of junior vocational colleges has grown to 118 as of 1991. with a combined enrollment of 359,049.

The junior vocational education purports to produce middle-level worker or technicians equipped with theatrical expertise and skills in combination. Their specialized courses are grouped into technical, agricultural, nursing, fishery, sanitation, commercial and business, home economics, and arts and athletics.

General Information

--Entrance

The basic requirement for entrance is to pass the standard entrance examination for college and university after graduation from high schools. 20-50 percent of the freshmen quota is reserved for graduates of vocational high schools in the same fields, and craftsmen qualified by the national certification system. One out of 3.2 applicants was accepted into junior vocational colleges in 1991.

--Curriculum

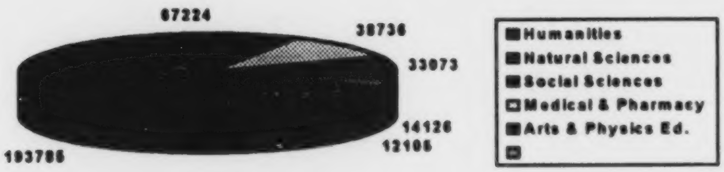
The curricula of junior vocational colleges is characterized by emphasis on practice, drawing on a school-industry cooperative scheme. This reflects educational needs associated with preparing student for the national certification examination.

The maximum number of credit units is 24 per semester, and graduation after two-year course requires 80 credit units (120 credit units for a three-year course). Out of 80 percent given to professional subject, lab and practice are given 50 percent.

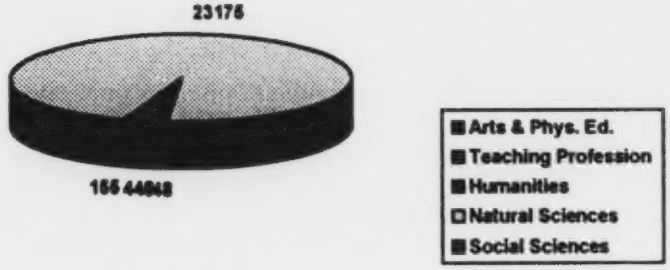
--School-Industry Cooperation

School-industry cooperation has manifold effect. It facilitates the exchange of technological and industrial information, enlarges opportunities for on-the-job training, employment and joint research. As of 1991, it has spawned 641 cooperative committees in various fields of studies.

Total: 359,049



National 26,676



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Private 332,373

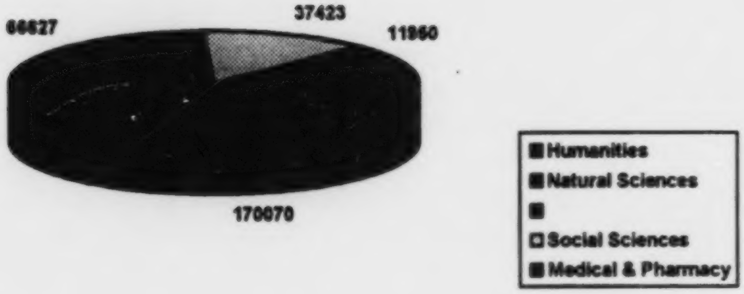

Fig 3. Students of Junior College, 1991

Fig 6. Changing Trends of Enrollment in Junior Colleges, 1981-1991

in thousands

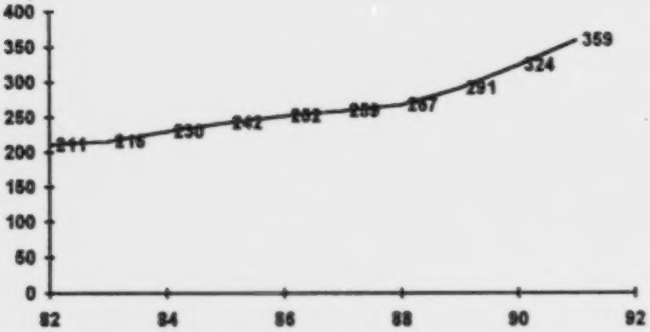

Fig. 4 Changing Trends of Enrollment in Junior Colleges 1981-1991

--Entrance to University and Employment

Although junior vocational college puts emphasis on practical education aimed at producing middle-level workers or technicians, it is not a terminal point of schooling. It keeps doors open for its students to continue education at universities. For employed youths, it provides avenues to open universities and the Korea Air and Correspondence University.

As efforts are intensified to ensure the relevance of junior college education to industrial needs, the percentage of the employed among graduates is increasing. Among the 1990's graduates, 82.9 percent of them were employed.

The future of Vocational Education at Junior College

The future roles of vocational education in furthering industrialization and technological development is receiving growing recognition. And in view of this, the government will intensify its effort to support and encourage junior college education, in recognition of its potential contribution to industrialization. And internship program will be introduced to ensure the relevance of educational programs and the employability of students, and arrangements will be made for the use of advanced industrial facilities by students and support for joint research works by teachers and industrialists will be provided.

4.2.3 Technical Education in Colleges/Universities

a) Expansion of Enrollment at Engineering Colleges

In response to the burgeoning demand of manufacturing industries, Enrollment capacities of engineering colleges are being expanded, with their proportion to the total enrollment rising from 52 percent to 55 percent. To reach this target, 4,000 places should be created each year. This expansion of enrollment necessitates a commensurate expansion of facilities and faculty members, and to accomplish this subsidies are provided to private universities to help them strengthen the engineering fields.

b) Expansion and Strengthening of Open College

Open college which is similar to Institute of Technology in Japan and Taiwan, and polytechnics of England. Main purposes of the open college established in 1982 were to provided continuing education at higher education to the industrial workers, vocational high school and junior vocational college graduates.

Therefore, privileges are given to those who are industrial workers and vocational high school graduates when they take entrance examination. They usually take evening courses as part-time students. So, they have flexibility to study 4 year college program while taking a job.

There are 12 open colleges in 1993. The number of open college will be increased so that industrial workers can get further higher educational opportunities and provide for transfer opportunities to junior vocational college students.

SOME ASPECTS OF VOCATONAL AND TECHNICAL EDUCATION IN SWIZERLAND

by
Dris Morf
President of the Swiss
National Commission for UNESCO

For vocational and technical education in Switzerland there exist two main methods, a dual system going hand in hand and being regulated in detail by federal and cantonal law and encompassing 250 different professions in the fields of industry, craft, trade, banking, insurance, transport, restaurant and hotel trade as well as other service trades and home economics:

a. Training within the enterprise
b. Training in vocational schools

This education is supervised by th 26 cantons (regions) of Switzerland and financed by the enterprises, the federal government and the cantons.

I. Training within the Enterprise

The enterprise trains the apprentice methodically in practical knowledge and working techniques according to a programme laid down by the professional regulations and takes him through various stages of training according to the detailed training programmes provided.

In addition, the apprentice attends introductory courses out-side the enterprise lasting one or several weeks during each year of his apprenticeship. During these courses he learns methodically the most up-to-date basic working techniques which he will at the same time be carrying out in his work within the enterprise.

His work at the vocational school is an integral part of his apprenticeship.

The apprentice receives wages, regardless of whether he is working in th enterprise or attending vocational school or introductory courses. In addition he is insured in the same way as other employees. The cost of training within the enterprise as well as any fees associated with the introductory courses are paid by the enterprise.

a. This system of training within an enterprise (apprenticeship under a vocational tutor) besides going to vocational schools -has no equivalent throughout the world other than in Germany, Austria and the Principality of Liechtenstein.

b. Its advantages: Large number of apprenticeship places available at regional level means that the location of apprenticeship is usually near the home of the apprentice;

c. Direct link between training and practical work (ensuring low rate of unemployment among young people).

2.Vocational schools

2.1 The Apprentice Attends Compulsory Classes at the Vocational School for a Day and a Half a Week.

3/5 of his training is directly connected with his profession, 2/5 is devoted to general knowledge and culture and to sport (as the famous Swiss philosopher and educator Pestalozzi said: we have to educate head, heart and hands of our children). This teaching programme is based on the teaching programme contained in the apprenticeship regulations and the final examination syllabus.

2.2 Advanced Vocational College (AVC):

In addition to their compulsory vocational training, apprentices have the possibility of attending courses at an advanced vocational college, one extra school day a week, if the work of the apprentice reaches both within the enterprise and at the vocational school the required standard and he passes the entrance examination. (At present, about 5% of the apprentices attend AVC)

2.3 Optional Subjects:

40% of apprentices take the opportunity provided to them to attend optional courses during an extra half-day's schooling a week in optional subjects (languages, arts, literature, general questions).

2.4 Supporting Courses:

Pupils having trouble to catch up on their vocational schooling are given the opportunity of attending supplementary classes for a limited period (half a day a week).

The apprentice must in any case be present at his or her place of work in the enterprise at least 3 days a week.

(For advanced vocational and technical education on a higher level there exist: technical schools, for example for heating or air-conditioning or refrigeration technicians, management or textile technicians etc.; colleges of home economics or applied arts or for the restaurant and hotel trade and for tourism; advanced technical colleges of engineering with 18 sections such as architecture, chemistry, micro-technology, information technology etc.; business administration colleges with the possibility to obtain the degree of " master of business administration BAC".)

3. Final Apprentice Examination

The examination is an integral part of the apprenticeship and is of course compulsory. The syllabus on which the apprentice will be examined is described in detail in the apprenticeship examination regulation.

The various individual examinations are spread over 3 or 4 days according to the profession. Part of it takes place on practical knowledge learned within the enterprise, the other part in theoretical knowledge learned at the vocational school.

The Federal Certificate of Competence protects the reputation of the profession in question and in many professional branches its possession is a condition to proceed to further professional training. The examination may be attempted twice.

4. Pedagogical Preparation of Training Staff

Great importance is attached to the training of instructors and teaching staff.

4.1 Vocational Tutors

All vocational tutors (heads of enterprises or specially designed employees responsible for training) must complete a methodological and didactic course consisting of 40 to 50 hours of instruction. During this training, great emphasis is laid on the psychology of young people.

The vocational tutor must also possess a certificate of competence in his profession, and in certain branches he must have passed the advanced vocational examination leading to the award of a diploma (the master's examination).

4.2 Instructors

Instructors in charge of introductory courses must fulfill the same requirements as vocational tutors.

4.3 Teachers in vocational schools

In order to enter the Swiss Vocational Teachers Training Institute aspiring vocational teachers wishing to teach in technical branches must have passed an advanced vocational examination or possess a technician's or an engineer's diploma.

The same is the case for vocational teachers wishing to teach in the general knowledge branches. Before being able to enter the institute, he or she must be qualified as teacher in a primary or secondary school.

4.4 Examiners for the Final Apprenticeship Examinations

Examiners must possess the same qualifications as vocational tutors or teachers in vocational schools. They are trained for their position as examiners in specific courses.

5. Financing

The actual cost of vocational training in Switzerland would be very difficult to determine. The cost of training within the enterprise is high, but is partially covered by the fact that the apprentice actually works.

There are estimates that the cost of a training period of three years in a skilled trade come somewhere to SFr. 40'000. to SFr. 50'000. per apprentice. For a training period of 4 years in an industrial profession, the cost may amount to SFr. 100'000. due to the high cost of each work-place and the necessity for a full- time presence of instructors.

Professional associations -thanks to the contributions of their members - invest several millions of Swiss Francs a year in additional training outside the enterprises, in their own training centers.

Estimates made several years ago about total annual expenses of federal, cantonal and communal administrations for vocational education: SFr. 930 mio (vocational schools), 15 mio (introductory Courses), 12 mio(final apprentice examinations), 1 mio (courses for apprentice examinations), 98 mio (full-time schools, schools for handicrafts etc.). Total : 1'056 mio SFr.

6. Choice of Profession (Services)

The final choice of a profession is a very important matter for every individual . For Swiss apprentices there are several services provided to help him or her to make the right choice.

6.1 Classes of Further Training

After the nine years of compulsory school they may stay on in school for a tenth year of further education and career orientation.

6.2 Pre-professional Experimental Training Period

This is made possible to future apprentices by the professional associations or by the enterprises themselves and generally lasts only five working days. It should allow a future apprentice to get a bit acquainted with the profession he has shown an interest in (and should prevent too many drop-outs later on).

6.3 Careers Advisory Service

These services are regulated by the Swiss law on vocational training. They have to be organized by cantonal governments on an adequate standard and have to be both optional and free of charge to those interested in them. They have to help people to find answers to the many problems arising when having to decide on a professional career.

Career advisors have to provide details of opportunities available to them, in a neutral and objective manner and taking into account the candidates aptitudes and wishes, so that he or she may be able to take a decision. (Career advisors have to provide information also for academical and higher vocational careers).

4. Profession Information Centers

They have all the necessary documentation for career planning and are open to everybody interested, without previous appointment and without having to submit to an interview. Their addresses are in the telephone directories.

Final Remarks

Switzerland has very little mineral wealth of its own; it depends therefore largely on the skill of its people to produce - and also export- goods and services of good quality. The high level of its social benefits available, the relatively small number of unemployed, together with high income levels, are to a great part due to the effective and permanent development of further vocational training of its citizens.

The flexibility of the legal instruments give the various partners in vocational training the opportunity to adapt training possibilities to professional developments..

Switzerland being a country with 4 languages (the most important ones are French and German) the offices for further information are placed in different language regions:

German - Deutschschweizer Berufsbildungsamter - konferenz, 6004 Luzern

- Schweiz. Institute fur Berufspadagogik, 3052 Zollikofen

French - Conference des offices cantonaux de formation professionelle, 2000 Neuchatel

and: - Federal Office for Industry and Labour, 3003 Bern

Annex II

TECHNICAL AND VOCATIONAL EDUCATION IN ROMANIA

-Present and Perspective-

by
Eng. Madlem Serban,
Headmaster of Technical School
Group No. 3

The social-economic evolution, full of consequences, accompanied by a special trend based on the principles of democratization have contributed to a large extentto the present phenomenon of change occurring in ROMANIA.

All these changes have created new problems to the education and have questioned the relevance and the efficiency of the most alternative variants established for the education system, which have been developed as a response to a more stable and less complex way of personal, social and professional life. On the other hand, the higher rate of obsolation of the knowledge and skills imposes anyway the taking into consideration of the educational targets and strategies which should be able to teach each individual not only in connection with what it is known, but with what it is unknown too.

Besides the problems that appear from the phenomenon of the rapid and revolutionary change in extra-educational fields, the situation within the educational field itself has raised new problems to it.

The reform of education in Romania is the subject that concerns now to the same extent the deciders, the teachers and the pupils as well as the other socially responsible factors -- the family, the community, enterprise, a.s.o.

For this reason, to talk at this time about the technical and vocational education, a component of the education system now in process of reorganization, means to present actually.

a. the X-ray photograph of the existing situation;
b. the short term projects;
c. the long term projects.

If in general sense, it is recognized the benefic contribution of the exchanges of experience, I especially appreciate the opportunity of this symposium which is offering the real occasion to express opinions, suggestions, alternative solutions in such a generous and authorized background. The education system in Romania has the following structure:

-pre-school -age: 3-6 years; I
-primary school -age: 6-10 years; I compulsory
-middle-school -age: 10-14 years; I
-secondary-school -age: 14-18 years;
-vocational school -age: 14-17 years;
-complementary or apprentices school -age: 14-16 years;
-foremen technical school, duration 1-3 years;
-specialization post-secondary school training, duration 1-3 years;
-higher education -duration 3-6 years;
-post-university training.

Analyzing the content of the education process we can talk about institutionalized technological education beginning with the age of 10 years (middle school) obviously approached in accordance with the peculiarities of the age.

This type of education is continued, as a result of school guidance, either with industrial secondary school, or with vocational school, or with complementary or apprentices school.

These education forms aim at distinct objects of pupils training and for this reason they are differently dimensioned:

a. the ratio between theory and practice;
b. the ratio between the disciplines of general education and those of speciality;
c. the duration of the practicle training in the school workshops and in enterprises;
d. the level of knowledge, skills and abilities.

Being an open education system, the graduates of the vocational school and those of complementary or apprentices school may continue their secondary school studies, after some validation tests.

The vertical articulation is achieved through the correlation of the roles assumed by the individual with the training stages created and in this moment is equal to the graduation of the secondary school (I have previously mentioned the stage of middle-school graduation).

The education forms: foremen school, post-secondary school, short or long term higher education designed to reach different levels of training find their correspondent in the jobs and positions that can be filled in by the graduates.

If to the brief presentation I add the possibilities of education offered by the family, community, informational sources, this means that I have defined the framing of the technical and vocational education within the concept of lifelong education we have joined to.

It is naturally that a brief comparative analysis allows the formulation of some clearer directions of action, which being unfortunately conditioned by other not yet defined factors, makes me state only the adherence to it and to put forward the concept of lifelong education only as a project.

1. Who Accomplishes the Technical and Vocational Education?

In the pre-university education the theoretical disciplines are taught by engineers, graduates of technical higher education, who passed the exam of psycho-pedagogy and methods.

The practical training can be also performed by the graduates of the technical school of foremen.

In the higher education only graduates of the higher education, who for a certain level must have acquired the doctor's title too, can belong to the teaching staff.

2. Where is the Technical and Vocational Education Achieved?

Usually, in the secondary school education, the theoretical activity is performed in the technical laboratories and the practical activity in the school workshops.

In the vocational schools and those of apprentices, it is recommended in the last year to perform the practical training in enterprises.

3. Which is the participatory mechanism of enterprises in TVE?

From the theoretical point of view the relation of school-enterprise, motivated by the increase of adaptability, access to modern technique, the opportunity of training in the sense of productive discipline, the respect for work, the building up of an economic thinking in real terms is appreciated as being necessary.

Unfortunately, now there are no laws providing that this type of relation should be compulsory for the enterprises.

The only type of relation is that of collaboration and it is achievable only with those enterprises which have no financial problems and are ready to assume this responsibility too.

It is possible that the future law of education would provide partnership relations with the economic ministries and departments, Ministry of Labor and Social Protection, representatives of employers, representatives of development prognosis bodies.

4. How are the Sources of Funds Provided?

The main source is the state budget.

In the case there are enterprises requesting the training of specialists in vocational schools, apprentices schools, foremen technical schools or post-secondary school, they have to consequently bear all the expenses occurred by the training of the necessary number of pupils.

Starting from this school year the local administration will be also implied in the financing of the technical and vocational education.

5. How are Selected the Specialties and Trades for which the Pupils and Students are Trained?

At the national level, with the approval of the Ministry of Education it is established the list of trades and specialties for the pre-university education.

Usually, the school groups, establishments which are combining several forms of technical and vocational training, are organized on technical profiles and depending on the material supplies, they request the approval for the number of class they are organizing.

The universities, having autonomy, make the selection, so that to assure specialists for the new created fields as management, marketing, industrial robots programmers,...

Actually the need to train specialists as quickly as possible for the new created fields, has determined the emergence of several private universities.

At the time being, it is being developed the system of accreditation of all the institutes of higher education existing in our country.

6. How is the Management concerning TVE Provided?

In the last years, the headmasters of the establishments in the pre-university education have been appointed by the School Inspectorate (the institution with the coordination role at the level of a county) and approved by the ministry of Education, as a consequence of the proposals made by the teachers belonging to the respective school.

In the higher education, the deans and rectors are elected by the professors of their universities.

Usually, the headmasters are professors with teaching experience or who have graduated management courses organized by the Ministry of Education, the Institute for the Education Sciences and other specialized bodies.

7. Instead of Conclusions

The brief presentation is an argument in supporting the statement that Romanian education is in full process of reorganization, a consequence of the changes in which our whole society is employed.

Without any exaggeration it can be stated that at the time being our educational system passes through a crisis.

Each historical period, each regime or way of governing is characterized by certain options: for some targets, for a certain type of society, for a development pattern, for certain standards of social behavior.

If these options are formulated not for the society as a whole but for a certain branch of activity, they become the policy of the respective field: the economical policy, cultural policy, human resources policy, a.s.o.

The educational policy that can be mistaken with the reform of education is looked upon not as a single case of the economical reform but as one of the most important key of the development, but as a long term social training process.

At the same time the interdependencies existing between the fields are not neglected either, therefore the educational policy is developed in such a way to favor the good progress of the policy of the other fields.

From the point of view of some deciders (Institute for Educational Sciences, the Romanian National Commission for UNESCO) the priority targets of the educational policy are:

a. democratization of the educational system;

b. improvement of the education quality;

c. increase of the social role of education

Once the targets are established, it follows then that all the steps should lead to the following goals:

a. providing a basic education for all the citizens of the country, in the form of some minimum abilities necessary to the life and work in a democratic society;

b. promoting an open and flexible education able to meet the most various interests, aptitudes and aspirations;

c. building up of conscious and responsible citizens preoccupied by the evolution of the society they live in, ready to commit themselves to the achievement of the various reforms of transition;

d. building up of new professional abilities, management and trade skills, economical and financial behavior, aptitudes and social relationships requested by the market economy;

e. development of the interest in education and permanent emancipation through an education concentrated not on the limited needs of a certain profession, but on the continuous availability for knowledge and action, for cultural and moral perfection, for reflection and social criticism in the view of adaptation to a changing social context.

TECHNICAL AND VOCATIONAL EDUCATION IN THAILAND

by
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1. Introduction

Thailand is centrally located on the Indochinese Peninsula of Southeast Asia. With an area of 513,115 square kilometers, the population is about 57.8 million. Out of this total population, there are 11.8 million in formal schooling system at primary, secondary and higher education.

The structure of the national education system is 6-3-3. That is, a six year of primary education, followed by a three year lower secondary, and another three years of upper secondary. Six years of primary schooling is compulsory education; and it is planned to extend to another three years or nine years compulsory education by the end of the Seventh National Development plan (1996). Vocational education starts at upper secondary level.

Table 1: Number of Students in Each Education Level and Age-Group in 1992 Academic year

Educational Level	Age Group	Number of Students	Percent of Total Students
Pre-Primary	3-5	1,390,417	11.71
Primary	6-11	6,757,437	56.91
Lower- Secondary	12-14	1,772,469	14.93
Upper-Secondary	15-17	944,970	7.96
-General		496,052	
-Vocational		448,918	
HIgher Education	18-22	1,007,586	8.49
Total	3-22	11,872,8799	100.00

Source: 1992 Educational Statistics in Brief, Educational Planning Division, Office of the Permanent Secretary, Ministry of Education.

Table 1 Shows the total number of students in each educational level in 1992 academic year. The total student population in formal school system was 11,872,897 which comprised of 11.71% or 1,390,417 pre-primary students, 56.91% or 6,757,437 primary students, 14.93% or 1,772,496 lower secondary students, 7.96% or 944,970 students in both general and vocational stream at upper secondary level; and finally, 8.49% or 1,007,586 students in higher education. It is worth-noting that number of students of higher education was higher than that of in the upper-secondary level education because the students who attended higher education may complete upper secondary through non-formal educational system.

2. The Role and Function of Technical and Vocational Education in the National Socio-economic Development

Technical and vocational education in Thailand plays an important role in producing middle-level manpower for socio-economic development of the country. Demand for manpower is actually depended upon the country's economic expansion. Thailand's economic growth was estimated to be 8.2% annually during the Seventh Development Plan (1992-1996). Manufacturing was expected to grow about 9.5 % per year, 8.2 % for service, 8.9% for construction and 7.2% each for commerce, communication, and transportation. The growth for each sector would increase a great demand for manpower, especially qualified and skilled outcomes of technical and vocational education.

However, the rapid economic expansion has resulted in the shortage of engineers as well as middle level manpower with technical and vocational education. Therefore, speed up production of middle level manpower in both quantity and quality has become a major policy issue of the government during the Seventh National Development Plan (1992-1996).

The followings are expected role of technical and vocational education in socio-economic development according to a study of Thailand Development Research Institute in 1991. Here, the *Por-Vor-Chor* level is a three-year program of vocational education at upper secondary level (Grade 10-12). The *Por-Vor-Sor* is a two-year program of technical education after the *Por-Vor-chor.*

The 1989 Labor Force Survey gives percentage distribution of employees by education level as follows: The share of vocational education formal employees was 12.73 of total employees. Here, the Por-Vor-Chor level came to 7.77 percent, while the Por-Vor-Sor & Por-Vor-Tor levels totaled 4.96 percent.The university level represented 10 percent of total formal employees.

Table 2 Employee by Education Level

Unit: Person

Education levels	1990	1995	2000
Less than and Primary	2,437,017	2,793,770	3,051,413
Lower Secondary	605,278	809,640	1,047,943
Upper Secondary	284,652	375,649	475,351
Por-Vor-Chor	389,494	523,837	678,423
Por-Vor-Sor	248,190	334,645	439,137
University	493,770	629,936	789,652
Teacher Training	459,482	509,690	581,403
Total	4,917,883	5,977,167	7,063,322

Source: NESDB/UNDP project, *Projections of Manpower Usage in Industry and Service,* 1992

In the years 1996 and 2000, the number of formal employees with Por-Vor-Chor certificate is expected to be 523.84 and 678.42 thousand persons respectively. For formal employees with Por-Vor-Sor & Por-Vor-Tor diplomas, the numbers are expected to be 334.64 and 439.14 thousand person in 1996 and 2000, respectively . (Table 2)

Table 3 Growth rate Employee by Education Levels

Education Levels	1991-1995	1996-2000
Less than and Primary	2.77%	1.78%
Lower Secondary	5.99%	6.30%
Upper Secondary	5.70%	4.82%
Pro-Vor-Chor	6.11%	5.31%
Por-Vor-Sor	6.16%	5.59%
University	4.99%	4.62%
Teacher Training	2.10%	2.67%
Total	3.98%	3.40%

Source: NESDB/UNDP Project, *Projections of Manpower Usage in Industry and Services*, 1992

During 1991-1995, demand for formal employees by educational level are expected to increase as follows: Por-Vor-Chor is expected to grow at 6.11 percent per annum while the Por-Vor-Sor & Por-Vor-Tor is expected to grow at 6.16 percent per annum. The growth trend is expected to decline during 1996-2000, in line with the overall trend of formal employee growth, university graduates in the formal employment pool is expected to grow at 4.99 and 2.67 per year during the two subperiods. (table 3)

Table 4 Share Employee by Education Level

Education Level	1990	1995	2000
Less than and Primary	49.55%	46.74%	43.20%
Lower Secondary	12.31%	13.55%	14.84%
Upper Secondary	5.79%	6.28%	6.73%
Por-Vor-Chor	7.92%	8.76%	9.60%
Por-Vor-Sor	5.05%	5.60%	6.22%
University	10.04%	10.54%	11.18%
Teacher Training	9.34%	8.53%	8.23%
Total	100.00%	100.00%	100.00%

Source: NESDB/UNDP Project, *Projections of Manpower Usage in Industry and Services*, 1992

Note that the share of formal employees with primary education is expected to decline to 43.20 percent in the year 2000, as compared with 49.55 percent in 1990. This reflects increasing demand for better educated workers from both the public and private formal sectors. The share of secondary educated employees (lower and upper) is expected to increase to 21.57 percent in the year 2000 compared to 18.1 percent 1990. The share for the vocational levels is expected to increase from 12.97 per-cent to 15.82 percent between the years 1990 and 2000. For university graduates, the share is expected to increase from 10.04 percent in 1990 to 11.18 percent in 2000.(table 4)

This means that vocational and technical education will play a vital role in providing job opportunities to a large number of population, and certainly they will contribute to socio-economic development of the country.

3. Role, Function and Participatory Mechanism of Enterprises in Technical and Vocational Education

A major policy on Human Resource Development in the Seventh National Development Plan (1992-1996) is to speed up production and improve quality of technical and vocational education. The following measures are included to encourage participation of enterprises in technical and vocational education.

3.1 Encourage and support a greater private sector role in providing education and training services.

a. Liberalize the education sector by improving and relaxing rules and regulations

b. Encourage cooperation between public education and training institutions and private enterprises in organized skill training programs in various forms such as apprenticeships etc.

3.2 Facilitate private sector participation in the planning of education and production of manpower as well as in formulating curriculum and training to ensure that the quality of the graduates meets demands of the labor market.

3.3 Encourage close cooperation between education institutions and industries to permit the educational system better to meet the needs of the labor market and to keep up with technological progress.

3.4 Allow schools to undertake projects to increase industrial related experiences and increase student training in factories.

3.5 Expand cooperation between schools and factories to encourage more technical education for factories workers and more practical factory training opportunities for students.

At the institutional level, participation of enterprises included the following activities.

a. On the job training of students
b. Job Placement
c. Pilot project on small scale enterprises
d. In-service training of staff
e. Research and Development of Technical and vocational education system
f. Curriculum and Teaching Media Development

g. Funding for Institutional Activities

Participation of enterprises in technical and vocational education in Thailand are not based on any act but with their consideration and willingness. Therefore, the degree of participations of enterprises are still relied upon institutional personnel's efforts, and personnel relationships.

In 1988, the Dual System which is a German Approach on technical and vocational education was adopted to provide in Thailand. It is believed that *dual system* will lead to a true co-operation between enterprises and institutions as well as between job seekers and their prospective employers. With technical and financial assistance of the Government of the Federal Republic of Germany through GTZ, a pilot project started at one technical college "Ta Luang Technical College".

The college worked cooperatively and systematlically with industries in providing training at the college one day and spending four day (in a week) in industries. Teaching and learning process involves about 20% theoretical aspects and 80% practical aspects. Each trainer is required to spend three year or 4800 periods comprising of 960 periods theoretical training and 1600 periods practical training in the college, and 2240 periods on-the-job training in industry in order to complete the program. Entrance qualification is the completion of Grade 9. In 1991, the first group of trainees or 20 trainnees completed the program and proved to be very successful in the labor market. The project has been improved and extended. In 1993, there are 130 industries, 17 fields in 13 colleges participated in the project.

Figure 1: Dual System of Technical and Vocational Education

Input	Process	Output
-Trainees -Instructors in the College -Trainers in Industries -Equipment -Curriculum, Teaching Media -Practical Training Program -Rules, Regulations -Budget -Corporation	-Theoritical and Practical Training in the College 20% -Practical Training in Industries 80%	Skilled Manpower

Participatory mechanism of enterprises in technical and vocational education should include the following aspects:

a. **Sharing of benefit should be the principe of participation.**
b. **Incentives for enterprises to participate in technical and vocational education should be created through improving and relaxing related rules and regulation.**
c. **Demonstrating sincerity and seriousness of cooperation and coordination with enterprises.**
d. Cooperation and coordination should be systematic, continuous and well-planned.
e. A responsible agency should be organized to develop and carry out participatory mechanism of enterprises in technical and vocational education.

4. Sources of Funds and Teaching Staff Concerning Technical and Vocational Education

4.1 Sources of Fund

Technical and vocational education in Thailand is mainly funded by government budget. For private technical and vocational institutions, tuition and fees are the main source of funding. In public institutions tuition and fees are also collected from students but they are lower than that of collected by private institutions about one out of three of four.

There has been an attempt to collect money from industries through enactment but it does not work. This may be due to the fact that there are a large number of small industries in Thailand, and they still do not understand or realize the benefit in participation with technical and vocational education institutions.

Private donations and internal assistance are usually in the forms of scholarships, equipment, and technical assistance.

4.2 Source of Teaching Staff

Technical and vocational education teaching staff in Thailand are those who graduated from university and institute of technology. During the past few years, it was found that only one out of three graduates of technical teacher programme took teaching occupation. In additions, there has been severe teacher brain drain to industries. As a result, technical and vocational education in Thailand has experienced severe shortage of technical teachers, especially in the fields of industry.

Speed up production of technical teachers in the shortaged fields is also a major issue in the Seventh National Development Plan to solve the problem of teachers' shortages, the graduates of technical education programme are recruited to serve as technical teacher. After two years of teaching work, they will be encouraged and supported to further their education in the degree level .

Part-time teachers are also hired from industries and local agencies. Linkages with industries are also developed to exchange personnel but limited to some institution in the big cities only.

5. Levels, System of schooling and Management Concerning Technical and Vocational Education

5.1 Levels

Technical and Vocational Education in Thailand prepares workforce for industrial, agricultural, and service sector with five programmes: Trade & Industry, Agriculture, Commerce, Home Economic, and Arts & Crafts. Four levels of formal curriculum are provided.

5.1.1 Certificate in Vocational Education

This is a three-year program at upper secondary level (Grade 10-11-120) Target groups being served are those who have completed lower secondary education (Grade 9)

5.1.2 Diploma in Vocational Education

This curriculum requires two-year of study for those who completed certificate level. The courses offered at this level are normally offered in areas similar to those of the certificate programme.

5.1.3 Diploma in Technical Education

This is a two-year programme for those who completed upper secondary education in the academic stream (Grade 12).

5.1.4 Diploma in Higher Technical Education

This curriculum is a two-year programme for those who completed diploma in Vocational Education. Those who graduated from this curriculum earn salary scale as that of graduates at bachelor degree's level.

The three-year for Certificate in Vocational Education aims at producing multi-skilled manpower, whilst both the two-year programme for Diploma in Vocational, and Technical Education produce technician manpower. These three programmes require high competitive entrance examination. The last curriculum, Higher Diploma in Technical Education, produce technical teachers for Vocational and Technical Education. Recruitment has been done through the achievement of the Diploma in Vocational Education level.

Table 5: Number of Students in Each Curriculum by Programme of Study 1992 Academic Year

unit: Person

Programme	Certificate in Vocational Education (Por-vor-chor)	Diploma in Vocational Education (Por-vor-sor)	Diploma in Technical Education (Por-vor-tor	Total
Trade & Industry	201,818	58,651	5,165	265,634
Commerce	206,337	61,503	20,675	288,515
Arts& Craft	13,610	3,199	145	16,945
Home Economics	14,406	3,964	99	18,469
Agriculture	7,955	6,632	742	15,329
Total	444,126	133,949	26,826	604,901

5.2 System of Schooling and Management

The Ministry of Education (MOE) is a major agency providing technical and vocational education. Technical and vocational education institutions under MOE will be under supervision of three departments.

Table 6: Number of Institute and Student

Department	Number of Technical and Vocational Education	
	Institute	Student
Department of Vocational Education (DOVE)	224	
Formal		258,896
Short-course Vocational Training		221,418

Office of the Private Education Commission (OPEC)		
Formal		
Short-course Vocational Training	303	291,625
	1377	313,100
Rajamongala Institute of Technology (RIT)		
Formal	30	65,505

5.2.1 Department of Vocational Education (DOVE)

Department of Vocational Education (DOVE) is the largest agency supervising public technical and vocational education institutions. DOVE provides technical and vocational education to 258,896 students in formal certificate and diploma programme; and to 221,418 students in short-course vocational training programme in 1992 academic year. The total number of permanent instructor was 15,770 while about 3000 were temporary instructors. There are five types of institution under DOVE:

a. Technical College
b. Agricultural College
c. Vocational College
d. Polytechnical College
e. Community and Industrial College

In 1993, the total number of college under DOVE is 245. At least 10 Community and Industrial College and 5 Polytechnic College will be established each year during the Seventh National Development Plan (1992-1996)

5.2.2 Office of Private Education Commission (OPEC)

Office of Private Education Commission (OPEC) take care of every type of private school, including technical and vocational schools. Private vocational schools can select to use DOVE or RIT curriculum. The programs and levels of education offered at DOVE, OPEC, and RIT are the same. In 1992 academic year, there were 303 private vocational offered formal programmes to 291,625 students, 1377 schools offered short-course vocational training programmes to 313,100 students.

5.2.3 Rajamongala Institute of Technology (RIT)

All programme being offered at RIT are similar to that of DOVE and OPEC except for teacher training and degree programmes. The thirty campuses of RIT are located throughout the country. In 1992 academic year, RIT provided formal progrmmes to 65,505 students with 3,678 instructors.

In addition, a large number of short-course vocational training programme are also provided by Non-Formal Education Department through its Regional and Provincial Centers. Most of the programme offered are based on local needs.

The National Institute for Skill Development, under the Ministry of Interior also play important role in vocational training.

Table 7: Budget of Vocational and Technical education as Compared with Budget of Ministry of Education

Unit: Million Bath

	1992	1993	1994
Ministry of Education	69,555.8 (100%)	88,177.3 (100%)	100,304.1 (100%)
Department of vocaitonal Education	4,598.7 (6.6%)	5,832.8 (6.6%)	6,936.8 (6.9%)
Rajamangala Institute of Technology	1,501.8 (2.1%)	1,854.3 (2.1%)	2,038.7 (2.0%)

The total budget of Vocational and Technical education has been about 8% of the total budget of the Ministry of Education during 1992-1994.

Table 8: Number of Institutions, Instructors and Formal Students in 1992 Academic year

	Institutions	Instructors	Students	Teacher/Students
DOVE	193	15,770	259,896	1:16
RIT	30	3,678	65,505	1:18
ONPEC	303	10,745	291,625	1:27

DOVE= Department of Vocational Education

RIT = Rajamangala Institute of Technology

ONPEC= Office of National Private Commission Education Council

THE NATIONAL VOCATIONAL QUALIFICATIONS SCHEME IN THE U.K. :

A Case Study in Cultural Innovation

by
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This paper is intended to use a case study of one state's attempt to establish an approach to vocational education which is intended to provide an appropriate labour force for the twenty first century. The piece is written in three parts. First the initiative under discussion, the scheme for National Vocational Qualification, is set in the context of recent British social policy relating to the labour force and education. Secondly, the scheme is described with special attention being drawn to the formal features which are considered 'innovative' within the British/European context. Finally, there is a discussion of the debate that these changes have generated, before consideration of whether such policy could be readily transferred to other societies.

Since the early 1970s Britain has been engaged in a continuing debate over the relationship between education and its occupational relevance, and the extent to which the entire labour force is equipped to face the changing nature of work in the future. In short, the basic concern has been with the way in which the workforce can enable Britain to prosper in the future. There has always been a crude human capital strand in British social policy (see Stephens and Roderick 1978), but the impact of the 'oil shock' in the early seventies, and contemporary developments in production technology led governments of both left and right to claim that we faced fundamental change in the nature of work, and national economic prosperity depended on engaging with change rather than resisting or ignoring it. The economic problems of the period were not seen as the inevitable trough in the cycle of capital accumulation, but were interpreted as symptomatic of a basic structural shift - things would never be the same again. In one of the key statements from the government, the Prime Minister posed a major challenge to education:

"... I am concerned on my journeys to find complains from industry that new recruits from the schools do not have the basic tools to do the job that is required.

I have been concerned to find that many of our best-trained students who have completed the higher levels of education at university or polytechnic have no desire or intention of joining industry. Their preferences are to stay in academic life (very pleasant, I know) or to find their way into the civil service. There seems to be a need for a more technological bias in science teaching that will lead towards practical applications in industry rather than towards academic studies." (Callaghan 1976).

The sense of moving into a new age is reflected in the titles of key books published at the time that included the prefix "post" in the title. On the backs of futurologists such as Toffler, we were told that we were entering the "post-industrial" world (Bell 1974), technology would displace political difference as we moved beyond ideology (Bell 1988), at the very best we were moving beyond the established mass production process into the 'post-Fordist age' (Murray 1989). For some these altered times offered opportunity for liberation from the drudgery of labour (Stonier 1983); but for other a dark side of a workless state was predicted (Showler and Sinfield 1981). Most important for our purpose was the claim that the economies that would generate wealth and success must shift their focus to knowledge-based technologies. We must become a 'learning society' (Husen 1974), what Australia has called a 'smart society'. Education had suddenly moved to the top of the political agenda, and had a key role in the future. The issue centered on the kind of education to be provided, and even more on the relationship between education and vocational training.

If the existing circumstances were associated with out-dated economic assumptions then new approaches were required. In extreme cases the educational system was attacked as preserving an elite, non-vocational approach which valued arts and traditional 'culture' as opposed to science and technology. Schools and their staff were accused of promoting values which were antithetical to industry and commerce, and universities were seen as symbolizing the priority of arts and the established professions over more economically 'practical' subjects such as applied science. This issue is extremely important in that it underlines the necessity for any strategy in this field to acknowledge that formal changes in curriculum or training practice must recognize that any specific policy must also engage with the traditional 'culture' of a society. Formal change in method or content is unlikely to succeed unless attitudes change, and there is a serious commitment on the part of staff delivering the schemes. The struggle for ideological change in the British context has been over an attempt to promote what is called an 'enterprise culture'- an attempt to ground vocational changes not only in practical necessity, but also in a logical and 'moral' value base.

The attempts to foster greater interaction between the educational world and the world o f work have been located in three areas:

Schools: Industry

a. All school attenders experience work experience during compulsory school time

b. Special schemes are geared to technical education in schools

c. " Vocational" qualifications can now be studied in schools.

"Transition" from school to work

a. All unemployed school levers are guaranteed a training place on a national scheme leading to recognised qualifications

b. Young workers are encouraged to engage in training while at work

c. Companies receive government aid to train young workers.

Re-training/Development of Mature Workers

a. All mature unemployed workers are eligible for funded training

b. Special schemes exist for workers to train to re-enter the labour force (particularly women)

c. Companies receive government aid to train mature workers.

Allied to the above the state has arranged for vocational training provision to be broadly under the control of industry and commerce as opposed to the educational establishment as was the previous case. This control applies to both course content and provision, and assumes that employers best know the labour power needs of their industries. In general the emphasis is upon learning/training throughout life and links strongly with current western theories of lifelong and continuing education. National aspirations are best summarised by outlining the education and training targets originated by the British organisation for industry (Confederation of British industry) and endorsed by the government in 1991:

1. Lifetime Learning

a. By 1996, all employees should take part in training and development activities.

b. By 1996, 50% of the workforce should be aiming at NVQs or units towards them

c. By 2000, 50% of the workforce should be qualified to at least NVQ level 3 or its academic equivalent.

d. By 1996, 50% of medium to larger organisations to be 'Investors in People'[1]

As can be seen the concept of national qualification is central to this policy aspiration to produce what in 1981 was described as " a flexible, adaptable workforce to cope with the uncertainties that cloud the future" (M.S.C.1981).

2. National Vocational Qualifications

By the eighties workers in the Unites Kingdom could choose from a huge range of vocational awards relating to occupations. There were many different awarding bodies and there was no necessary correlation between awards made by different agencies. In short the field was chaotic. Thus, one major aim of the governemnt agency responsible for NVQ was to bring order into vocational training and related awards. This is most easily seen in the diagram below which indicates the different levels of qualification against a broad description of the related occupational category:

Fig. 1 NVQ Levels :

NVQ LEVEL	DESCRIPTION
5	Professional Higher, Middle Management
4	Higher Technician, Junior Management
3	Technician, Advanced Craft Supervisor
2	Craft Workers

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[1] 'Investors in People' is a government-sponsored scheme to encourage employers to engage fully in the promotion of employee development.

1	Foundation

Source: NCC/FEU (1993)

The intention is that all technical and vocational awards recognised as NVQs will be allocated as specific level and the lower levels should enable "progression" through the stages by individual workers. Although increased training cannot guarantee employment one intention is to foster labour mobility, or at least a sense of possibility of occupational advancement in the labour force.

3. Content of Awards

Two of the major changes ushered in by NVQ have been the shift in responsibility for the content of training and the nature of the curriculum. Firstly, in almost all cases, to receive the approval of the national NVQ Council all awards must be sanctioned by the industry to which the award relates. For example, any award relating to petroleum refining would have to seek the endorsement of the Petroleum Training Federation. Such organisations -- known as Lead Bodies in the system-- are firmly based within industry on the grounds that

> "It is employers who recruit and employ staff, and it is employers who have expectations of the performance of those staff. It follows that employers and industry representatives should set the standard". (Fletcher 1991 p.23)

In this way it is assumed that awards offered will have maximum relevance to industrial requirements. Once an award has been approved by industry its delivery may be undertaken by a constantly changing range of agencies and consortia; the crucial point being that the level of the award and its content are standardised.

The second fundamental shift relates to the NVQ stress on standards of performance set by industry/commerce. Once defined, these general standards are re-started in terms of detailed statements of measurable competence. Also the 'range' of settings and variable conditions in which the competence must be displayed in the work setting is also stated. That is to say that the focus is placed on the ability to perform a specific task at a certain level and in specific contexts, irrespective of how the competence is acquired:

> " The key is assessment of *performance*. How people learn, what training program they undertake or what method of training or learning is employed is, in effect, irrelevant. To achieve an NVQ, an individual must *demonstrate competent performance."* (Fletcher 1991 p.26)

A Common example/comparison used in the U.K. is that of the state driving test, where the competence to drive a vehicle is tested in conditions completely divorced from the way in which such ability has been achieved. In this sense the elements of teaching and assessment have been completely separated.

Care has been taken to define competence with both breadth and precision as the following early example shows:

"... competence is a wide concept which embodies the ability to transfer skills and knowledge to new situations within the occupational area. It encompasses organisation and planning of work, innovation and coping with non-routine activities. It includes those qualities of personnel effectiveness that are required in the workplace to deal with co-workers, managers and customers." (Training Agency 1988/9).

Such an all-embracing definition is not of great practical value and clarification in respect of levels of competence was soon produced to give guidance to providers e.g.

Fig. 2 NVQ Framework - Level Descriptors

Level 1
Competence in the performance of work activities which are in the main routine and predictable or provide a broad foundation, primarily as a basis for progression.

Level 2
Competence in a broader and more demanding range of work activities, involving greater individual responsibility and autonomy than at level 1.

Level 3
Competence in skilled areas that involve performance of a broad range of work activities, including many that are complex and non-routine. In some areas, supervisory competence may be a requirement at this level.

Level 4
Competence in the performance of complex, technical, specialised and professional work activities, including those involving design, planning and problem-solving, with a significant degree of personal accountability. In many areas competence in supervision or management will be a requirement at this level.

Source:
NCVQ (1988)

The key differences between NVQ and traditional training "courses" are that the assessment is based in the workplace, there are no time scales attached to the acquisition of competencies, there are no age or access limits and there is no set sequence of study or training. This inherent flexibility is promoted as a key feature of the system, enabling workers to collect units over time, and the concept of *credit accumulation* is a central feature of the system. This new approach to learning has marked a major shift in the theory-practice dichotomy so often noted in British vocational education. As an NVQ worker involved in current research recently remarked:

> " In the past technical education tested that young workers had the basic knowledge to do the job, and assumed they could do it. Now, we know that they can do a job, and therefore assume they have adequate knowledge."

4. Advantages

The benefits often claimed for the NVQ system can be summarized briefly:

4.1 The Employees

a. Employees receive external recognition of their skills

b. The system fosters career planning linked to competence-based qualifications

c. Assessment of evidence of prior achievement can provide credit toward recognised qualifications

d. Qalification can be acquired without 'disruptive' patterns of traditional training "courses"

e. Competencies can be readily acknowledged in other work sites if the worker moves occupation.

4.2 The Employers

Competence-based analysis reveals to workers what is expected of them in terms of outcomes

a. Assessment (including performance appraisal) can be used to effectively identify training need

b. Training programs can be tailored to the exact requirements of the company, focusing on real need

c. Significant numbers of staff will take on a training function, thus gradually influencing the `culture' of the company

d. Basic standards can be used to assess labour needs and inform selection.

A note should be added in respect of NVQ and already established vocational qualifications. It must be repeated that NVQs should not be understood as the outcome of traditional training courses, but are statements of occupational competence in a defined area of work. Currently, although already established qualifications are still in existence there is considerable pressure on awarding bodies to re-structure qualifications to comply with NVQ demands for specific standards stated in terms of NVQ levels, and a competence-based format. Similarly, qualifications gained in an NVQ routes are being recognised as valid prior learning in the field of established academic awards. For example, middle managers qualified via the NVQ route can claim exemption from parts of university awards in management. In this way it is hoped that parity between the vocational route and the academic route to 'higher status' awards will be established. The impact of NVQ on higher education is only just being negotiated. Ultimately, it should be possible for an employer or worker to locate awards and personal performance with absolute accuracy within the NVQ framework. For example, a competence based managerial NVQ at level 5 would be the equivalent standard as graduate level work in a University. Secondly, some awards have re-organised along competence based lines so that what was a `traditional' course may also be recognised as an NVQ by nature of its form and delivery. Finally, NVQ based work may be accredited by established courses as prior learning: This means that students/workers entering established courses need not undertake the entire course in order to receive the award.

A final point must be made in respect of the individual employee. The worker may acquire recognition of his competence at different stages, even in different work places, so s/he is invited to keep the NVQ certificates and other awards in a standard form known as a record of vocational achievement. This standard document also includes a section for individual action plans for regular review. The document is meant to be used for both personal career planning and to provide employers with standardised evidence of what employees (or potential employees) *can actually do,* and reveal "gaps" in competence that need to be filled by training.

This last point is very important as it highlights a key change in the relationship between industry and the technical and vocational education system in the United Kingdom. Although workers may be employed in a named occupation - clerical officer, electrical engineer etc.- there is no certainty that all the elements of an NVQ can be achieved in the workplace. This becomes particularly important where industries are seeking to raise standards, and employers at the level of both individual companies and as organisations have entered into partnerships with the state providers of technical and vocational education to provide the additional training and assessment if requires to fulfill

NVQ requirements. This stress on the practical partnership between the economic sector and educational providers has proved a recurrent theme of recent social policy.

5. Critique

Although it has been generally agreed that any system that seeks to recognise the skills of the labour force - particularly those who previously were considered "unskilled" - is to be welcomed, a number of criticisms have arisen. Firstly, a number of very practical problems have been noted. Enterprises, particularly small units, have found difficulty in undertaking the substantial role of assessment at the workplace that is central to the scheme. The need to train assessors to NVQ standards, and to release them to engage in any great degree in a training function has proved too great a burden of time and finance to be undertaken, despite the urgings of government. The problem of assessment and moderation of standards has been resolved to some degree by the established vocational institutions-colleges, etc.- undertaking the assessment function, while industry/commerce fosters and develops the skill base. However, the persistence of a dichotomy in the system needs to be noted. Additionally, there has been evidence of resistance to the changes in the vocational education sector, often articulated around the critique of NVQ as behavioral reductionism, stripping away the "knowledge" from the mechanical practice of occupation. The final "practical" criticism of current policy is based on the historical evidence that industry in the United Kingdom has a lamentable record of developing its labour force, and evidence suggests that it is likely to concentrate only on the short term benefits of training effort rather than more long-term strategies (see Roderick and Stephens 1982).

At a more fundamental level, the very assumption on which the scheme rests have been attacked. It has been argued that the 'deindustialisation' of the West and the rise of high-technology industries and services is not the dawn of some post-industrial age, but simply the reordering of capitalism on a world scale, with the older 'Fordist' production being re-located to sites of lower labour cost (see Thrift 1986). Additionally, analysts have claimed that the "advanced" economies are observing a re-segmentation of their labour force in which high levels of 'skill' will only be needed by a few 'core' workers, while the majority will remain on the "periphery" of the labour market, essentially brought into work according to fluctuations in economic activity. Some go so far as to say that there is the danger of certain sectors of the population who will never "work" in the traditional sense, and will form an "underclass" of the permanently unemployed. Within such an analysis, to talk of full employment via training is at worst to propagate a cynical ideological myth or at best a cruel deception.[2]

These critics point to the historical role that "skill" has played in the defense of workers within capitalism, not as a collection of discrete competences, but as a total unity of knowledge and application. It is argued that as this category is dismantled and reduced to component parts, "skilled" workers become de-skilled and disempowered in the economic arena, unable to defend their interests, as their 'jobs', over which they had some control, could now be done by "unskilled" labour plus technology (see C.C.C.S. 1981, Tomaney 1990). However, despite such criticism there is still a deep faith across the entire political spectrum in the United Kingdom that vocational intervention is a key to our economic survival.

6. Conclusion

It might be tempting to see the NVQ initiative in the U.K. as a discrete, 'progressive' shift in vocational and technical education. The stress on industrial leadership, relevance, labour flexibility and continuous up-grading of the labour force can be readily seen as "common sense" responses to world market change. However, what may be appropriate for one economic order may be quite unsuitable for another, consequently some of this paper has been used to contextualise the 'mechanics' of the policy. The use of labour policy can perhaps only be understood in relation to the basic values of the social order in which it operates, but such considerations are beyond the brief of this paper.

Bibliography

Bell, D. (1974) *The Coming of Post-industrial Society: A Venture in Social Forecasting* London, Heinemann.

Bell, D. (1988) *The Third Technological Revolution-And Its Possible Socio-Economic Consequences* Salford,Univ. Salford.

Bowman, M.J. (1988) " Links between general and vocational education: does the one enhance the other?" in *International Review of Education* 34.2 pp.149-171.

Callaghan, J. quoted in *Times Educational Supplement* (1976) 22 October.

C.C.C.S. (Centre for Contemporary Cultural Studies) (1981) *Unpopular Education* London, Hutchinson.

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[2] Broad discussion of the initial economic/social critique can be readily located in Hall, S. and Jacques, M. (1989).

Department of Employment (1988) *Training for Employment* London, HMSO.

Fennell, E. (ed) (1991) *Development of Assessable Standards of National Certification* Dept of Employment, HMSO.

Fletcher, S. (1991) *NVQs, Standards and Competence* London, Kogan page.

Hall, S. and Jaques, M. (eds) (1989) *New Times: the Changing Face of Politics in the 1990s* London, Lawrence and Wishart.

Husen, T. (1974) *The Learning Society* London, Methuen.

Institute of Manpower Studies (1984) *Competence and Competition: Training and Education in the Federal Republic of Germany, the United States and Japan* London, N.E.D.O.

McKelvey, C. and Peters, H. (1991) *"NVQs and language" in Adults Learning* 3.3. pp.65-6 Leicester, N.I.A.C.E.

M.S.C. (Manpower Services Commission) (1981) *New Training Initiative: An Agenda for Action* M.S.C., Sheffield.

Murray, R. (1989) "Fordism and Post-Fordism" in Hall, S. and Jaques, M. (eds) *New Times: The Changing Face of Politics in the 1990s* London, Lawrence and Wishart. pp. 38-53.

NCC/FEU (National Curriculum Council/Further Education Unit) (1993) *A Curriculum Perspective* NCC/FEU, London.

NCVQ (National Council for Vocational Qualifications) (1988) *The NVQ Criteria and Related Guidance* NCVQ, London.

Roderick, G. and Stephens, M.D. (1978) *Education and Industry in the Nineteen Century: the English Disease* London, Longman.

Roderick, G. and Stephens, M.D. (eds) (1982) *The British Malaise: Industrial Performance, Education end Training in Britain Today* Lewes, Falmer.

Showler, B. and Sinfield, A. (eds) (1981) *The Workless State* Oxford, Matin Robinson.

Stonier, T. (1983) *The Wealth of Information* London, Thames Methuen.

Therborn, Goran (1986) *Why Some People are More Unemployed than Others* London, Verso.

Thrift, N. (1986) "The geography of international disorder" in Johnston, R.J. and Taylor, P.J. (eds) *A World in Crisis* London, Basil Blackwell.

Tomaney, J. (1990) "The reality of workplace flexibility" in *Capital and Class* 40 Spring pp.29-60. jwallis 1.

AN OVERVIEW OF VOCATIONAL TECHNICAL EDUCATION IN THE UNITED STATES: CONTEXT, STATUS, AND CHALLENGES

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1. Introduction

a. The General Information provided to participants in this symposium identified four areas of focus:

b. The role and function of technical and vocational education in national socio-economic development;

c. The role, function and participatory mechanism of enterprises in technical and vocational education;

d. Sources of funds and teaching staff concerning technical and vocational education;

Level, system of schooling and management concerning technical and vocational education.

We address each of these areas in this paper, however, not in the order listed above. The views presented are our own and should not be interpreted as reflecting official United States policy with regard to these topics.

In the United States, as throughout the world, this is an era of rapid economic and technological change to which the vocational-technical education system is attempting to respond. Political, educational, and labor leaders work continuously at fine-tuning the system to meet the needs of their constituents. Now, however, those constituents appear to be asking for a major overhaul rather than a slight fine-tuning. The reasons are apparent in the dynamics of the country's economy and workplace.

Carnevale (1991) points out that the United States "is adjusting to the competitive realities of a new economy" (p. 1). The new economy results from global competition and the use of flexible technologies to pursue new standards of quality, variety, customization, convenience, and timeliness in addition to the usual objective of productivity. These standards require new kinds of organizations, termed "high performance organizations" (National Center on Education and the Economy 1990; U.S. Department of Labor 1991). Workers must be more highly skilled to respond to the new requirements. As firms become more flexible and efficient, they cause structural changes in the economy--more jobs in services and fewer in production. Clearly, an overhaul is needed to provide education and training that is responsive to this new economy. Vocational education was created to respond to the shift from an agricultural to a mass production, industrial economy. Now it must re-create itself to respond to the shift to post-industrial economy.

2. Role in Socio-Economic Development

Vocational education is dynamic and not static. The people served, the skills taught, and the delivery systems all change. A brief review of the overall context of vocational education will set the stage for a description of the challenges facing the system and its ability to respond to those challenges.

Vocational-technical education has evolved in the United States in response to the needs of students/workers and the needs of the economy. There have been four major emphases, or priorities, in the 76 year history of federally funded vocational education. These emphases can be tied to the legislation that authorized the federal role:

Time Period	**Legislation**	**Emphasis**
1917 to 1962	Smith-Hughes Act and sequels	1. Labor market needs 2. More relevant education
1963 to 1989	Vocational Education Act of 1963	3. Special populations
1990 to present	Carl D. Perkins Vocational and Applied Technology Education Act	4. International economic competitiveness

The emphases added with each new law supplemented and did not replace the emphases of the prior legislation. All four emphases now influence the conduct of vocational-technical education in the United States at the present time.

These laws set the framework for public vocational-technical education, but this system is not the only provider of education and training for work in the United States (Pratzner and Ryan 1990). In addition to publicly funded secondary, post-secondary, and adult vocational education there are apprenticeship programs; on-the-job training offered by business, industry, and trade unions; proprietary (private, for profit) schools; military job training; and federally funded training programs such as those provided through the Job Training Partnership Act (JTPA) which includes the Job Corps. Employer-sponsored training represents a large proportion of the total training provided.

Despite overlaps and gaps, each education and training agency or program has identifiable purposes and clientele. Collectively, they constitute a very significant enterprise, affecting millions of lives and spending billions of dollars annually. They differ from each other fundamentally in their goals -- from remediating early socialization gaps to increasing profit margins. Their instructional strategies range from traditional classroom practices to on-the-job monitoring. They focus upon competencies that range from literacy skills to job ready technical proficiency, from personal development to work socialization, from basic assembly to complex state-of-the-art high technology. Their organizational structures range from federal, state, and local agencies or multi-corporate companies, to single programs in a school system or an entrepreneurial operation.

3. The Changing Workplace and Changing Work Force

This complex vocational education delivery system evolved in response to the needs of a labor market dominated by manufacturing. In the evolution of the new, global economy, the artisans of the preindustrial craft economy and the mass production workers of the industrial age are being replaced by interdependent work teams (Carnevale 1991). Carnevale adds that, "at present, our general understanding of the new economy far exceeds its acceptance in the American workplace. In short, we know where we need to go, but we don't know how to get there" (p.5). We do know that our path to this new economy does include a more responsive vocational education and training system.

What are some of the dynamics to which vocational education must respond? The Secretary of Labor's Commission on Achieving Necessary Skills (SCANS) identifies two events that symbolize the changes that have transformed the workplace in the last two decades: 1) the OPEC oil embargo of 1973, which highlighted the globalization and interdependence of the economy, and 2) the development of the personal computer, one of the key technologies changing the nature of work (U.S. Department of Labor 1991). Although globalization increases possibilities for economic expansion, it changes competitive standards. Greater productivity and flexibility in production systems are required. One effect of technology is to require more and better skills as well as independent initiative of workers (Carnevale and Gainer 1989). Rapid technological change makes skills obsolete faster, and retraining must be more frequent.

The SCANS report also identifies the differences between the traditional workplace and the new "high performance" model. In the traditional model, "work is routinized, repetitive, and organized along hierarchical lines...It emphasizes mass production by workers who are not asked to think about what they are doing" (ibid., p.3). In high performance workplaces, on the other hand, "work is problem-oriented, flexible, and organized in teams." Quality is designed into the product development process by enabling workers to make on-the-spot decisions" (pp. 3-4). Jobs today (Figure 1) require more education than jobs of the past required. Clearly, jobs of the future are forecasted to require even more education and training.

Data from the U.S. Bureau of Labor Statistics indicate that jobs currently held by the work force in the United States can be characterized as follows:

a. More than one-third require little more than an eighth-grade education.
b. More than one-third require a basic education plus some additional noncollege skills.
c. Fewer than one-third require a four-year college degree.

"The future occupational structure is projected to provide jobs for workers at all educational levels, but persons with the most education and training will enjoy the best opportunities" (Silvestri and Lukasiewicz, 1989, p. 42). In other words, the fastest-growing jobs will be those filled by the best educated workers. Who are the workers who will fill these jobs? Two-thirds of the work force of the year 2000 is working today, and the other third has already been born. Because of slower population growth, fewer people will be entering the work force, so the average age of workers will increase. In addition, the proportion of women, minorities, and immigrants in the work force will increase. These groups are currently under-represented in the occupations projected to be growing the most rapidly and over-represented in occupations that are projected to grow slowly or decline.

This different work force will need to fill very different jobs--jobs that require higher skills in communication, mathematics, and reasoning. As new jobs are created, the majority will require education beyond high school. The ability to learn on the job, to benefit from retraining, and to work effectively in teams are among the competencies now being termed "workplace basics"(Carnevale, Gainer, and Meltzer 1990).

When all these trends are considered in light of the fact that we will no longer grow by adding workers as we have in the past, it is clear that education for the workplace -- vocational education -- faces new challenges.

4. An Overview of the American System

The vocational education delivery system is vast and diverse. It is a system only conceptually, not operationally. There are at a minimum 57 separate state and territorial systems in the United States. In many states, the secondary and public postsecondary systems operate under separate governance, administrative, and funding arrangements, adding to the complexity.

This enormous diversity in programs and services contributes to the goal of providing multiple service deliverers at the local level so that individuals at different ages and stages of their lives have options that meet their specific developmental and employment needs. Because these diverse programs have not been viewed as components of an "articulated system" for work preparation, there has been little coordination or collaboration in their policies, practices, or services. Moreover, they do not share a common philosophy or approach to education and training.

5. Levels

Virtually all secondary-level vocational education occurs in public high schools. One-third (32 percent) of high school graduates take a sufficient number of vocational courses (a minimum of four full-year, one hour courses) to be considered prepared for employment (Hoachlander et al. 1992). These courses are taken in approximately 16,000 high schools, a relatively small proportion of which are full- or shared-time vocational high schools (U.S. Department of Education 1992b). At shared-time schools, students spend half of their time, usually half the school day, at the vocational schools and half their time at their home high schools.

Sixty percent of high school graduates continue their education in some type of postsecondary institution (U.S. Department of Education 1992a). About 1,000 of these institutions are public two-year community colleges that offer technical preparation for employment or the first two years of a four-year baccalaureate program. There are an additional 6,400 noncollegiate postsecondary institutions offering vocational-technical education. Most of these are relatively small, and most are private and operated for profit. Although they are private, much of their revenue comes from public sources through grants awarded to students from economically disadvantaged families.

One-fourth of students who enroll in public school withdraw before graduating from high school (U.S. Department of Education 1992a). A majority of those who withdraw, however, return and graduate or take the General Educational Development Test to earn high school equivalency diplomas.

Individuals from economically disadvantaged families are eligible for assistance in education and training programs under Job Training Partnership Act (JTPA). Students served under JTPA have their tuition and travel costs reimbursed. Almost all formal education or training programs for JTPA participants are provided by established educational institutions. The JTPA system conducts very little classroom training independent of the education system. On-the-job training for JTPA participants is provided by private employers. JTPA reimburses employers for part of the wages of the trainees for a specified period of time.

6. Administration

In each state, secondary vocational programs are governed by a state board for vocational education, which in most states is also the state board of education. In some states this board also governs public postsecondary technical education; in other states postsecondary programs are under a separate board responsible for higher education. Both type of boards act through state agencies which are responsible for directing the operations of the local educational agencies that actually conduct training programs. These programs are offered in high schools, community colleges, and technical institutes.

Private, for profit vocational-technical schools -- referred to as proprietary schools -- are licensed by the states, but are not governed by the boards that are responsible for public institutions. To receive licenses to operate, proprietary schools must meet standards established by the states. The primary method used to ensure that proprietary schools offer adequate programs is accreditation. Accreditation involves the establishment of standards regarding essential characteristics of schools such as facilities, equipment, faculty, and curriculum. Schools are periodically reviewed, usually on a five-year cycle, to ensure they are meeting the established standards. Only students at accredited schools are eligible to receive state and federal grants and guaranteed loans.

Vocational instructors come primarily from two sources: four-year, baccalaureate level teacher preparation program and experienced workers who teach the skills they formerly practiced. College prepared teachers are in occupational related to the vocational service areas of agriculture, business, marketing/distribution, and home economics. In the vocational service areas of trades and industry, health, and technical, the instructors are primarily former experienced workers. Instructors in these areas typically have not studied teaching methods. Consequently, they must take required courses in pedagogy to obtain permanent certification to teach. These courses are usually offered in the evenings, on weekends, and in the summer so they do not conflict with normal teaching schedules.

Estimates of the total expenditures on public vocational-technical education are difficult to obtain because much of the funding is mixed with funding for general education. The federal government funds a relatively small proportion, usually estimated at 10 percent or less of the total public expenditure. The other 90 percent comes primarily from the states, next from local sources, and at the postsecondary level, from fees paid by students. In the 1991 fiscal year, the federal appropriation for vocational-technical education was slightly more than one billion dollars (Vocational Training News 15 April 1993).

All secondary vocational-technical education is offered at no cost to the student. At the postsecondary level, students in public institutions typically pay about one-sixth (17 percent) of the total cost of their education (El-Khawas et al. 1988). In private institutions, students pay the full cost, but as noted above, students from economically disadvantaged families are eligible for federal and state grants to pay part of their costs.

7. Business/Industry Involvement

Employers play a limited role in providing skill training to young people under the age of 25. Glover and Marshall (1993) have described employer practices as follows:

> Although almost all firms (that offer jobs with career potential) eventually hire high school graduates, they normally wait until the job applicants are "mature and settled down" in their mid-twenties and have accumulated some work experience. (pp.595-596).

Over two-thirds (68 percent) of formal employer-based training involves employees in the age range of 25 to 44. Employees younger than 25 represent less than 10 percent of those involved in formal employer training programs (U.S. Census Bureau 1987).

Employers' primary involvement in public vocational-technical education is as members of advisory committees. Most states regulations include advisory committees as a requirement to qualify for state funding. At their best, advisory committees can be a powerful influence for quality programs. Too often, however, they have relatively little impact (Warmbrod 1987).

Some employers are involved in cooperative education which places advanced vocational students in actual work settings on a part-time basis. Most cooperative programs involve a half day of work experience and a half day of school. The vocational service areas of business, marketing/distributive, and trade and industry have the largest proportion of their students, but less than one-third, involved in cooperative programs (Parsons undated). Somewhat surprisingly, proportionally more vocational-technical students are involved in cooperative programs at the secondary than at the postsecondary level.

Direct purchase of training is another form of involvement of business and industry in public vocational-technical education. Companies purchase training through tuition reimbursement programs and through customized training programs. Policies regarding tuition reimbursement vary by employers but usually involve paying some or all of the cost to employees of employment-related courses offered by schools and colleges. Customized training programs are designed to provide specific skills to selected employees. Companies contract with educational institutions to design and provide such training for a negotiated fee.

A few employers donate equipment to schools and colleges for the use of students. Such donations are relatively rare and constitute a very small proportion of total educational revenue (El-Khawas et al. 1988).

8. Current Challenges

The challenges posed by the economic and technological forces of change have profound implications for the structure of vocational-technical education. First, it is clear that the work force will require more education and training. A shift to high performance work organizations means that workers will need a strong foundation of basic skills, higher order problem-solving and analytical skills, and personal qualities such as flexibility and the ability to work in teams. The findings of cognitive science show that the most effective way of teaching skills such as these is in a functional context, with opportunities for practical application (Sticht 1989; U.S. Department of Labor 1991). Vocational education is a natural setting for the integration of academic subjects such as mathematics, science, and communications; and it has always emphasized a practical, real-world context.

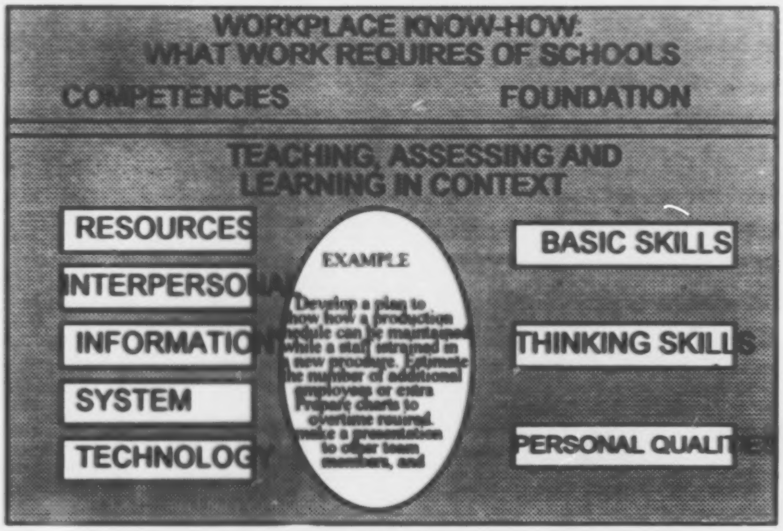
Lifelong learning, one of the national goals of America 2000 (U.S. Department of Education 1991), is vital to keeping up with the rapid pace of change. K-12 programs need to lay the foundation for developing the habit of lifelong learning, and the opportunities for continued learning and retraining must be provided by the delivery systems that cater to adults.

Access and equity have been major goals of vocational education since the Vocational Education Act of 1963. The threat posed by increased education and training requirements to populations already at risk puts added emphasis on the need for the work force preparation of the disadvantaged, limited English proficient, handicapped, incarcerated, displaced homemakers, and single parents.

A related issue is the increasing cultural diversity of the work force. Vocational education must prepare people to be aware of cultural differences and to communicate successfully with co-workers from diverse backgrounds.

The enormity of the challenge of preparing the work force into the 21st Century has spurred a number of responses. The previously mentioned SCANS report (U.S. Department of Labor 1991), although acknowledging that only part of education involves preparing people for work, focuses specifically on "What Work Requires of Schools." The SCANS Commission identifies "workplace know-how" as the key to effective job performance. This know-how has two elements: a foundation and competencies (Figure 2). The three-part foundation consists of basic skills, thinking skills, and personal qualities that we would recognize as employability skills. Upon this foundation builds the five competencies that are the "hallmarks of today's expert worker" (ibid., p. xvi): the ability to deal with resources, other people, information, systems, and technology.

These foundation skills and competencies cut across the areas we know as "vocational" and "academic". If "human productivity depends on what we do with what we know" (Pritz 1991, p.4), then an effective response to the needs of the workplace and the challenges of the new economy is the integration of academic and vocational education. The natural connection of academic concepts and vocational applications leads to learning that is relevant, attentive to individual needs and learning styles, and requiring high standards. The integrated approach promotes learning for all: the educationally and economically disadvantaged who are unable to meet the demands of the changing workplace, the college graduate who must still make a successful transition from school to work, people with special needs who need a carefully structured, individualized approach.


WORKPLACE KNOW-HOW:
WHAT WORK REQUIRES OF SCHOOLS
COMPETENCIES
FOUNDATION
TEACHING, ASSESSING AND LEARNING IN CONTEXT
RESOURCES
INTERPERSONAL
INFORMATION
SYSTEM
TECHNOLOGY
EXAMPLE
Develop a plan to show how a production schedule can be maintained while a staff is trained in a new procedure. Estimate the number of additional employees or extra overtime required. Prepare charts to make a presentation to other team members, and
BASIC SKILLS
THINKING SKILLS
PERSONAL QUALITIES

In addition to an integrated curriculum, another potential response is the reorganization of vocational education. "The curricular structure in vocational education has remained virtually unchanged for 80 years" (Gray 1991, p.444). A curriculum organized or clustered around broader definitions of work would better serve the need for flexibility and transferrable skills in the constantly changing workplace. One example is Woodland High School in Sacramento, California, where the entire school's curriculum is organized around career paths in six cluster areas (Pritz 1991):

a. Business and marketing

b. Social, human, and governmental services

c. Agriculture and natural resources

d. Health, home, and recreation

e. Arts and communication

f. Industrial technology, engineering

The State of Oregon has recently adopted a clustering that is virtually identical and is preparing to implement it in all its high schools.

A broader secondary curriculum is consistent with the principles of "tech prep" -- one of the major innovations in vocational-technical education in the United States. Tech prep requires close articulation between the last two years of secondary school and the first two years of postsecondary instruction. Tech prep programs are being developed and tested in most of the 50 states.

The vocational education system of the United States is complex. This multilayered system has both advantages and disadvantages. A great variety of opportunities exist for people to gain the skills they need. Providers of the these programs must be responsive to the dynamics of the workplace. Yet it is recognized that greater challenges to the system have never existed and that a greater degree of coordination and articulation is needed.

Former President Bush's policies to respond to the challenges facing education were presented in America 2000, An Education

Strategy. (U.S. Department of Education 1991). President Clinton has not yet set forth his administration's approach to education. Since he was one of the governors that was instrumental in developing the goals set forth in America 2000, it is likely that his policies will also endorse a commitment to lifelong learning. Historically, vocational-technical education in the United States has attempted to give people access to economic opportunities by preparing them to meet the needs of the workplace. We will continue to adapt to meet these new challenges.

Others around the world are facing similar challenges. As we work at these challenges, we welcome opportunities to do so in partnerships that are increasingly global.

REFERENCES

Carnevale, A.P. America and the New Economy. Alexandria, VA: American Society for Training and Development, 1991.

Carnevale, A.P., and Gainer, L.J. The Learning Enterprise. Alexandria, VA: American Society for Training and Development, 1989.

Carnevale, A.P., Gainer, L.J., and Meltzer, A.S. Workplace Basics: The Essential Skills Employers Want. San Francisco: Jossey-Bass, 1990.

El-Khawas, E., Carter, D.J., and Ottinger, C. Community College Fact Book. New York: Macmillan, 1988.

Gray, K. "Vocational Education in High School: A Modern Phoenix?" Phi Delta Kappan 72, no. 6 (February 1991): 437-445.

Glover, R.W., and Marshall, R. "Improving the School-to-Work Transition of American Adolescents." Teachers College Record, 94, no.3 (Spring 1993) : 588-610.

Hoachlander, E.G., Kaufman, P., Levesque, K., and Houser, J. Vocational Education in the United States: 1969-1990. Washington, DC: U.S. Government Printing Office, 1992.

National Center on Education and the Economy. America's Choice: High Skills or Low Wages! The Report of The Commission on the Skills of the American Workforce. Rochester, NY: National Center on Education and the Economy, 1990.

Pratzner, F.C., and Ryan, R.D. "Vocational Teacher Education." In Handbook of Research on Teacher Education, edited by W. Robert Houston. New York: Macmillan, 1990.

Parsons, C. The Bridge: Cooperative Education for All High School Students. (Working Paper for Youth and America's Future), Washington, DC: The William T. Grant Foundation Commission on Work, Family, and Citizenship, undated.

Pritz, S.G. "The Global View of Vocational-Academic Integration." Paper presented at the Western Michigan Forum on Integration of Vocational and Academic Education, Grand Rapids, Michigan, August 1991.

Silvestri, G., and Lukasiewicz, J. "Projections of Occupational Employment, 1988-2000." Monthly Labor Review 112, no. 11 (November 1989): 42-65.

Sticht, T.G. "Functional Context Education." In Investing in People. Washington, DC: U.S. Department of Labor, 1989.

U.S. Census Bureau, Survey of Participation in Adult Education. Washington, DC: U.S. Government Printing Office, 1987.

U.S. Department of Education. America 2000, An Education Strategy. Washington, DC: U.S. Government Printing Office, 1991.

U.S. Department of Education, National Center for Education Statistics. The Condition of Education, 1992 Washington, DC: 1992a.

U.S. Department of Education, National Center for Education Statistics. Digest of Educational Statistics, 1992 Washington, DC: 1992b.

U.S. Department of Labor. What Work Requires of Schools. A SCANS Report for America 2000. Washington, DC: The Secretary's Commission on Achieving Necessary Skills, 1991.

Warmbrod, C.P. "Employer Involvement in Curriculum Decision Making in Postsecondary Occupational Education." in K.M. Hollenbeck, et al. Postsecondary Occupational Education Delivery: An Examination. Columbus, OH: National Center for Research in Vocational Education, The Ohio State University, 1987, pp. 7-1 to 7-25.

TECHNICAL EDUCATION AND INDUSTRIAL TRAINING IN HONG KONG

by

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1. Introduction

1.1 The story of Hong Kong is well-known. Its change from being a small barren island, totally devoid of natural resources, to being first an entrepot and then a robust manufacturing, financial and trading centre, despite numerous political, social and economic upheavals, is well documented. What is not so well-known, however, is the efforts made by Hong Kong in developing a system of technical education and industrial training that has helped to make some of these changes possible, a system that is designed to meet the specific needs of the economy and seeks to match output of trained personnel with the economy's requirements. People were, and still are, Hong Kong's only natural resources. It was this abundance of people that provided the impetus needed to bring into existence a system of human resources development that has helped to transform what would otherwise have been a heavy economic burden into a highly productive workforce.

1.2 This paper attempts to give a brief account of the development in technical education and industrial training in Hong Kong in the last three decades.

2. Industrialisation and Export Trades 1956-1965

2.1 The major industries in Hong Kong up to the early 1950s were the newly emerging textile industry started by immigrant industrialists from China and those allied to Hong Kong's port activities such as shipbuilding and ship repairs. The expansion of these industries as well as the start of other industries was assisted by the abundance of both cheap and industrious labour and local and foreign capital seeking investment opportunities.

2.2 Hong Kong's industrial revolution began first with the manufacture and export of cotton textiles in 1950s and then woollens and made-up garments as well. The 1960s saw the introduction and expansion of light engineering-based industries including the manufacture of plastics and electronic goods.

2.3 The successful change of the economy from that of an entrepot to one dominated by manufacturing and exports was assisted by the laissez-faire policy adopted by the government under which people and capital could move freely in and out of the territory and trade could be conducted with minimum government regulations and interference. Other factors which also contributed to the growth of the manufacturing sector included:

a. political stability,

b. concomitant development in supporting facilities such as banking, insurance, communications, transportation and utilities,

c. government encouragement of enterprise,

d. harmonious labour relations,

e. the opening of major overseas markets, e.g. the United States, to Hong Kong products, and

f. influx of foreign capital and technological know-how.

2.4 Parallel to its efforts to encourage the development of the manufacturing industry, the government also participated in the promotion of exports trade. The rapid pace of Hong Kong's industrialisation from 1947 to 1965 is illustrated by the following statistics:

Year	Population	No. of Industrial Establishment	No. of Persons Employed
1947	1,750,000	972	51,338
1955	2,490,400	2,550	118,488
1965	3,692,300	8,492	357,497

2.5 Traditionally, in China as well as in Hong Kong, a young person could learn a trade only by serving under a master and pick up the skills of the trade by watching and imitating the master. How well the apprentice learned his trade depended on his intelligence and his master's skill level, willingness and ability to instruct. Formal craft apprenticeship existed only in government departments such as the Public Works Department, the Kowloon-Canton Railway, and Printing Department and a few of the large companies such as the dockyards and public utilities. Compared with those in traditional apprenticeships, apprentices in formal schemes had proper training, security of employment and the opportunity to attend part-time technical education at the Hong Kong Technical College (the predecessor of the Hong Kong Polytechnic).

2.6 In the early stage of industrialisation, organized industrial training was generally non-existent except in a few of the large concerns and government departments. Pre-employment skill training was provided by some voluntary organizations, but more as a social service than a co-ordinated scheme for meeting industry's needs. There was no co-ordination and little attempt to ensure quality.

3. Development of Vocational Training System in Hong Kong Industrial Training Advisory Committee 1965-1972

3.1 The rapid expansion of Hong Kong's manufacturing industries in the decade preceding 1965 resulted in a shortage of trained workers and prompted the government to review its policy on industrial training. In September 1965, the government appointed the Industrial Training Advisory Committee (ITAC). Under the chairmanship of the Commissioner for Labour, the non-statutory ITAC comprised representatives of industry, labour, government departments and other organizations. It was assigned the task of identifying the training and related problems and making recommendations to government for measures to solve these problems. ITAC was also required to recommend an appropriate permanent machinery for ensuring a comprehensive system of industrial training geared to meet the developing needs of Hong Kong's economy.

3.2 Although concerned principally with manpower at technician, craft and operative levels the training and related problems identified by ITAC included:

3.2.1 Inadequate efforts were being made to cope with the manpower demand arising from expansion and diversification. Also, both the industry and government lacked reliable manpower information based on which future manpower demand could be assessed and proper training plans formulated;

3.2.2 There was a lack of accepted standards or criteria for measurement of skills required for the principal jobs in all industries. There was also a serious lack of technical education facilities, particularly at craft and technician levels, needed to provide workers at these levels with the knowledge they need to cope with advancing technology and new techniques;

3.2.3 Employers were generally short-sighted and not willing to train, thinking only of the cost of training but not the benefits that would result. To be effective, trainees should be given an initial period of broad basic training off-the-job but few employers in Hong Kong were able to set aside space for this purpose;

3.2.4 There was no policy defining the responsibilities of government and employers in the overall training of workers, nor a policy that would take account of the prevailing circumstances in Hong Kong.

3.2.5 There was no central body to organize and co-ordinate the training efforts of various parties concerned nor accord priorities for training.

3.2.6 The shortage of highly skilled and knowledgeable instructors and trainers, capable of imparting their skills, would severely hamper the development of technical education and industrial training.

3.3 By 1971 the ITAC had, through the manpower surveys conducted by the complex of industrial committees which it set up, drawn up a picture of the manpower employed by ten major industries. The surveys categorized workers by job and level i.e. technician, craft and operative in automobile repairs and servicing, building, clothing, electronics, electrical apparatus and appliances, machine shop and metal working, plastics, printing, shipbuilding and ship repair, and textile industry. It made an assessment of these industries' short-term manpower needs, evaluated the deficiencies in both technical education and practical training facilities and made recommendations for their solution. The major conclusions and solutions recommended by ITAC were:

3.3.1 To overcome the shortage of skilled workers, industry-wide training schemes including modern apprenticeships should be set up by employers to train craftsmen and technicians.

3.3.2 The training should consist of both:

a. organized practical training according to specific training programs and comprising both on-the-job (i.e. shopfloor) training preceded by a period of broad basic off-the-job training, and

b. related technical education (i.e. theoretical training) and such practical training as was necessary to illustrate theory.

c. The division of responsibility for the overall training of manpower should be:

i. Practical training - employers should accept the full cost of providing practical training, whether given in industrial premises or in training centers specially built and equipped for the purpose. Where such centers are established, employers should be responsible for all capital and recurrent costs. The government should, however, grant land free of premium for the erection of such training centers provided that they are non-profit-making, or alternatively, loans should be provided from the Development Loan Fund for the purchase of flatted factory space for the purpose.

ii. Related technical education - government should be responsible for funding the institutional training necessary for the organized teaching of theoretical knowledge at all levels.

3.4 Government should build four additional technical institutes (additional to the Morrison Hill Technical Institute) to provide the extra technical education facilities needed for the training of manpower at craft and technician levels. Government should also expand the system of prevocational education.

3.5 A permanent body should be established to replace the ITAC with added responsibilities for not only extending investigation into the manpower training needs of the commerce and service sectors but also the training of technologists.

3.6 Facilities should be established for training additional instructors and upgrading existing instructors. Qualified instructors should be given due recognition. As later paragraphs will show, many of ITAC's recommendations were accepted and implemented by government.

4. Hong Kong Training Council 1973-1981

4.1 The 1970s saw an era of further rapid expansion of Hong Kong's manufacturing industries and external trade. However, there were also causes for worries. Not only were Hong Kong's exports subject to the adverse effect of increasingly tight economic conditions and commercial and trade policies in the principal markets (the United States and the European Economic Community). Its products also faced increasingly strong competition from neighboring countries and area such as Taiwan, Korea and Singapore, where labour costs were lower. To remain competitive, the industry needed to further improve the productivity and efficiency, upgrade the quality of its products, venture into more sophisticated products and diversify into new fields. All this calls for a well trained, adaptable and versatile workforce capable of responding quickly to new requirements and modern technologies. The '70s also saw another but gradual shift in the base of the territory's economy, with the commerce, financial and service sectors assuming growing significance, paving the way for Hong Kong's evolution as a financial centre.

4.2 In October 1973, the government established the Hong Kong Training Council (HKTC) to replace the ITAC, with wider terms of reference. Its main function was to advise on measures necessary to ensure that there was a comprehensive system of manpower training geared to the developing needs of Hong Kong's economy. Its scope of work covered not only industry's manpower needs at the technician, craft and operative levels, but also those at the technologist level. It would also investigate the requirements of all levels of manpower in the commerce and service sector. It was vested with the responsibility for recommending an appropriate statutory body which would ultimately replace itself and which would have both advisory and executive functions.

4.3 Like the ITAC, its membership included employers' and workers' representatives, educationalists, representatives of organizations with special interest in training and of relevant government departments. But unlike its predecessor, it was chaired by a prominent member of the community who was not a government official but was also a member of the Legislative Council. To achieve its objectives, the HKTC worked through a complex of training boards and committees - the training boards being responsible for all training matters in their respective industrial, commercial or service sectors and the committees dealing with problems common to more than one sector.

4.4 The HKTC implemented, or assisted in the implementation of many of ITAC's recommendations following their approval by the government. It built on the foundation laid by ITAC and greatly improved the manpower assessment methodology used by ITAC to assess future demand. Some of the important developments which followed the establishment of HKTC and some of its achievements are described in the ensuing paragraphs.

5. Manpower Assessment Methodology

5.1 To achieve a reasonable balance between the manpower requirements of the economy and the output of trained manpower, that is, between manpower demand and supply, information on the existing employment market and future manpower requirements is needed for policy formulation and planning. The manpower assessment methodology used by ITAC but refined by the HKTC, shown diagrammatically in Appendix 4, consists essentially of the following steps:

5.1.1 conducting large-scale manpower surveys of all major industrial and commercial sectors to collect up-to-date information on the existing employment situation by job and skill level,

5.1.2 analyzing the manpower structure and skill shortages from the survey data,

5.1.3 forecasting manpower demand, taking into account wastage, internal promotion and other factors such as technological changes and market requirements,

5.1.4 aggregating annual demand for similar principal jobs in different economic sectors, and

5.1.5 estimating the supply of trained manpower from educational institutions (graduates, etc.) and other forms of training.

including estimation of participation rates.

5.1.6 comparing the likely supply with the forecast demand to establish likely shortages or surplus.

5.2 The HKTC, through its training boards and committees, conducted manpower surveys of all sectors once every two years to update manpower statistics and forecasts and detect the changing needs of the economy. Based on the survey data and forecast needs, the training boards and committees would make recommendations for the development of technical education and industrial training facilities required to meet the need of their particular sector. Aggregation of the sectoral demand by job, discipline and level gave the national demand for trained manpower by job, discipline, etc.

6. Apprentice Training

6.1 The HKTC jointly with government actively promoted apprentice training among employers in industry as the most effective and economical means of training technicians and craftsman. The apprenticeship scheme advocated by the HKTC included both planned practical training and experience during the period of apprenticeship and attendance at a part-time (preferably day release) course of related technical education.

6.2 On the advice of HKTC, the government enacted and brought into force in 1976 the Apprenticeship Ordinance to promote and regulate apprentice training in designated trades. The Ordinance has become the cornerstone for organized apprentice training and provided a sound legal framework for the training of craftsmen and technicians. It requires an employer to enter into a contract of apprenticeship when engaging person aged between 14 and 18 in a designated trade except when that person has completed an apprenticeship in the trade. The contract must be registered with the relevant authority under the Ordinance (currently the Director of Apprenticeship). Contracts of apprenticeship in respect of non-designated trades or for apprentices aged over 18 may also be registered voluntarily.

6.3 The Ordinance has contributed greatly to increasing the number of young people receiving training in properly organized schemes. Since 1976, 42 trades have been designated and more than 72,000 apprentices have been registered under the Ordinance.

6.4 The Ordinance is now administered by the Apprenticeship Section of the Vocational Training Council. Duties of the Section include advising and assisting employers in the training and employment of apprentices, ensuring that the training is properly carried out, helping to resolve disputes arising out of registered contracts, and co-ordinating with educational institutions to ensure that apprentices receive the necessary complementary technical education.

7. Statutory Training Authorities and Training Levies

7.1 The HKTC assisted in the implementation of two industry-wide contributory training schemes, proposed by the ITAC and accepted by government, for the construction industry and the clothing industry. It assisted in the preparation of the legislation which established in 1975 the Construction Industry Training Authority and the Clothing Industry Training Authority to provide training for their respective industries and empowered them to impose a levy on their industries to finance the training. The levies imposed were used to build, equip and maintain training centers. Land for all the Authorities' training centers was granted at nil premium by the government. To date, there are three training centers for construction trades and a fourth one is being built and the Clothing Industry Training Authority has two centers which provide training in clothing manufacture.

7.2 These training schemes were based on the then prevailing government policy on industrial training, which was that employers should be responsible for funding practical training and government for complementary technical education. These schemes helped employers in the two industries to overcome the difficulties they had in mounting off-the-job training and distributed as fairly as possible the cost of training among employers in the industries.

8. Change of Policy in the Funding of Industrial Training

8.1 Following the success of the two contributory schemes, a number of proposals were made for similar schemes for other industries. While the HKTC accepted the need for such schemes and recommended their acceptance by government, there was opposition to the introduction of a large number of disparate training levies on the ground that collection would be a difficult if not impossible problem. As a result, the HKTC recommended for government's consideration in 1978

10.7.3 government enacted in 1976 the Apprenticeship Ordinance, providing a legal framework for apprentice training that not only helped to increase the number of establishments operating organized apprenticeship schemes to more than 3,500 by late 1990, but also increase the number of new entrants to about 5,000 in recent years.

10.7.4 also in 1975 government enacted the Industrial Training (Construction Industry) Ordinance and the Industrial Training (Clothing Industry) Ordinance and establishing under these Ordinances the Construction Industry and Clothing Industry Training Authorities and empowering them to impose a levy on their respective industries for building and operating training centers on land granted to them free by government. The Construction Industry Training Authority now operates three training centers and the Clothing Industry Training Authority two training centers, with a total (both full-time and part-time) annual intake of about 4,000 and 7,000 trainees respectively. On completion of their basic training in the centre, all craft and technician trainees are expected to enter industry as second year apprentices.

10.7.5 by 1979, the remaining two of the four technical institutes recommended by the ITAC (i.e. Haking Wong and Lee Wai-lee) became operational, increasing further the number of full-time, part-time day and part-time evening places available in technical institutes to 3,900, 13,100 and 18,900 respectively.

10.8 As a direct result of the recommendations made by the Hong Kong Training Council in 1978 and the Advisory Committee on Diversification in 1979, the statutory Vocational Training Council was established. This body took over from government the responsibility for technical education and industrial training. Following this technical education at craft and technician level and industrial training at all levels underwent further and very rapid expansion.

10.9 By 1986 the construction of two more and larger technical institutes (at Shatin and Tuen Mun) was completed, increasing further the number of technical institute places available at craft and technician level to 9,700 full-time, 16,000 part-time day and 26,000 part-time evening.

10.10 One year later saw the opening of the eighth and last technical institute (at Chai Wan) in the current expansion program, as disabled persons aged 15 and over for the purpose of improving their employment prospects and preparing them for open employment.

9.1.5 to establish, operate and maintain technical colleges, technical institutes, industrial training centers and skills centers.

The purpose of placing both technical education and industrial training under one body was that this would bring about a better dovetailing of the two essential elements of training.

9.2 To carry out its functions, the VTC has set up 20 training boards to cover manpower training of all major industrial and commercial sectors and 8 general committees to deal with training areas relevant to more than one sector of the economy. The responsibilities of the training boards and some of the general committees include assessing the future manpower needs of their respective sectors and recommending measures to the Council for meeting such needs, preparing and disseminating training materials and operating training centers or other training schemes.

10. Developments in Technical Education and Industrial Training in the last 2 decades

10.1 By the end of the 60s, Hong Kong had two universities (the Hong Kong University and the Chinese University of HK), a technical college (the Hong Kong Technical College) and a technical institute (the Morrison Hill Technical Institute). The Hong Kong Technical College had an enrolment of 350 full-time and 5,500 evening students in disciplines which included building, engineering, commercial studies and textiles. The courses provided were mainly at technician level but there were also some which aimed at satisfying the academic requirements of British professional institutions.

10.2 The Morrison Hill Technical Institute opened its doors in 1969 and provided full-time, part-time day and part-time evening courses, mainly at the craft level, in construction, engineering and commercial studies. The total enrolment was 220 full-time and 7,000 part-time.

10.3 In other words, Hong Kong had a technical education infrastructure which was typical of that found in most developing countries, an infrastructure for "training generals but not soldiers". As the findings of the first manpower surveys conducted by ITAC indicated clearly, the infrastructure was totally at odds with the needs of industry and inadequate for meeting needs of Hong Kong's industries for craftsmen and technicians.

10.4 The industrial training picture, too was equally bleak. As mentioned earlier, the number of apprenticeship schemes which would be considered adequate by Western standards were the few operated by the shipyards, some public utilities and two or three government departments. The annual intake into these schemes totaled no more than two to three hundreds.

10.5 The standard of craft skills in the engineering-based manufacturing industries was generally low but sound craft skills were vital to the further development of these industries. The skill level of workers in the construction industry was little better. Not only was there a shortage of craftsmen and technicians but there was also every indication that the shortage would worsen as industry expands. There was little off-the-job training facilities other than those in the few establishments which operated formal apprenticeship schemes.

10.6 At the technologist level, few opportunities existed locally for graduates of local universities to obtain the post-qualification practical training they needed to complete their overall training as engineers and obtain professional status.

10.7 This was the situation which prevailed when the Industrial Training Advisory Committee was appointed in 1965. But resulting from its recommendations, which were backed by the findings of the first series of manpower surveys, and the subsequent work of its successor the Hong Kong Training council, the following improvements to the training scene took place:

10.7.1 the Hong Kong Technical Teachers' College was established in 1974 to provide facilities for training workshop instructors and technical teachers.

10.7.2 two of the four technical institutes recommended by ITAC (Kwai Chung and Kwun Tong Technical Institutes) became operational in 1975 increasing the total number of places available in technical institutes to 2,700 full-time, 5,200 part-time day and 13,400 part-time evening.

10.7.3 government enacted in 1976 the Apprenticeship Ordinance, providing a legal framework for apprentice training that not only helped to increase the number of establishments operating organized apprenticeship schemes to more than 3,500 by late 1990, but also increase the number of new entrants to about 5,000 in recent years.

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10.9 By 1986 the construction of two more and larger technical institutes (at Shatin and Tuen Mun) was completed, increasing further the number of technical institute places available at craft and technician level to 9,700 full-time, 16,000 part-time day and 26,000 part-time evening.

10.10 One year later saw the opening of the eighth and last technical institute (at Chai Wan) in the current expansion program, as well as the commencement of expansion work on two existing technical institutes, bolstering further still the number of full-time, part-time day and part-time evening places available in technical institutes to 12,600, 21,400 and 32,000. The VTC has set up the Committee on Technical Education to be responsible for all matters related to the administration, co-ordination and development of technical education provided in the technical institute.

10.11 Also in 1985, two large training centre complexes were completed, one in Kowloon Bay and the other at Kwai Chung. They house between them 10 training centers and provide off-the-job pre-employment training in basic skills for all levels of manpower (i.e. from operative to technologist) as well as upgrading training for serving workers for the automobile, electrical, electronics, gas, hotel, machine shop and metal working, plastics, printing, textile, welding industries.

10.12 Since 1985, the VTC has also established a Precision Tooling Training Centre, with the aim of upgrading Hong Kong's tool-making capability, a Jewellery Industry Training Centre and Seamen's Training Centre, the latter to provide training to enable Hong Kong seamen to meet requirements of International Conventions. The VTC has further set up three training centers to provide pre-employment and upgrading training for the Insurance, Banking and Electronic Data Processing sector. A training centre on ASIC Design and another one for the Wholesale/Retail and Imports/Exports sector were opened in the latter part of 1990.

10.13 Together, the 18 centers provide about 32,000 full-time and part-time training places. All the centers are managed by the respective training boards or general committees of the VTC. They are equipped to simulate actual working conditions in industry. On completion of training, a trainee can either enter employment (in the case of an operative trainee) or into the second year of an apprenticeship (in the case of a craft or technician trainee).

10.14 In 1983, the VTC launched the Engineering Graduate Training Scheme. The main aim of the scheme was to bring about sufficient practical training opportunities for both engineering graduates and engineering students in sandwich courses to enable them to complete their overall training as engineers and satisfy the training requirements for professional status of the local as well as overseas professional institutions. The scheme achieves its goal by providing an incentive to employers who have the facilities to train but are not training to start training, and those employers who are training but can train more to increase their intake. Currently there are 386 trainees receiving training under the scheme, and to-date, about 2,280 engineering graduates have benefited from the scheme.

10.15 The VTC also set up in 1985 the Management Development Centre for the purpose of research, development, co-ordination and promotion of management education and training to meet the specific needs of Hong Kong managers. It has developed a General Management Program and identified the range of manager competencies which apply to Hong Kong at both middle management and junior management levels. The Centre has also developed new learning products in the medium of computer-based training, interactive videos and linear videos. The Centre is also organizing the First Regional Conference and Exhibition Developing Managers in the Asia Pacific Region to be held in May 1994 in Hong Kong.

10.16 In June 1992 the VTC undertook to administer the New Technology Training Fund under trust on behalf of the Government. Income from the Fund is used to finance a New Technology Training Scheme which is administered by the Committee on Training of Technologists. The objective of the Scheme is to promulgate and facilitate the adoption of new technologies beneficial to Hong Kong's industry and commerce. The scheme involves the provision of a matching grant to assist employers to send their employees to overseas or local courses, or working attachments for acquiring skills in new technologies. All the expenses for operating this scheme are financed by income earned from investment of the trust fund.

10.17 The VTC also organizes, commencing in 1992 at the request of the Employees Retraining Board, specially designed retraining programs for local workers displaced from employment by economic restructuring. These special retraining programs are funded entirely by the Employees Retraining Board and do not form part of the Council's approved program of activities. Their aim is to provide the displaced workers who do not qualify for entry into the Council's regular industrial training courses with opportunities for acquiring new or upgraded skills for employment. Such retraining courses include hotel cleaning and catering services, retail sales and stock-keeping, and Chinese typesetting.

10.18 The VTC also takes responsibility for providing vocational skills training to meet the needs, aspirations and abilities of disabled persons. Three skills training centers are in operation, providing a total of 540 training places. The VTC assists in the administration of three other skills centers operated by the voluntary agencies in Hong Kong providing a further 304 training places. In addition, a vocational assessment service, a technical aids and resource service and other support services are also provided.

10.19 The Executive Director of the VTC is also, by legislation, the Director of Apprenticeship in Hong Kong and is responsible for the administration of the Apprenticeship Ordinance and its subsidiary Regulations. This legislation governs the training and employment of apprentices through either mandatory registration (in the case of people under the age of 19 working in designated trades) or voluntary registration of their apprenticeship contracts with the office. In 1992/93, there were 8,996 registered apprentices employed in some 3,000 establishments.

10.20 The VTC, through its training boards, also organizes trade tests for the key trades in the automobile, building, civil engineering, electrical, jewelery, machine, shop and metal working, plastics and printing industries. In 1992/93, some 830 applicants took the tests and 363 trade certificates were awarded to those tradesmen who successfully passed their tests.

10.21 Finally, in 1990 the VTC accepted governments' invitation to make proposals for the transfer of 6,750 full-time equivalent places on sub-degree courses at higher diploma and higher certificate level from the local polytechnics as part of government's overall plan for the expansion of tertiary education system in Hong Kong. As a result, the VTC's plans are:

10.21.1 To build a new Technical College at Tsing Yi to provide for 3,550 fte places on sub-degree level courses to commence operation by October 1993;

10.21.2 To convert and expand the existing Chai Wan Technical Institute into another Technical College to provide for 3,200 fte places on sub-degree level courses to commence operation by October 1993;

10.21.3 To modify and expand the remaining seven technical institutes to take on the technician courses being provided at the Chai

Wan Technical Institute; and

10.21.4 To build a new training centre complex at Pokfulam to accommodate the 3,000 full-time craft level places to be displaced from the eight technical institutes by August 1992.

All the above four projects have been completed on time.

10.22 To summarize the technical education and industrial training scene in 1992, there are now seven technical institutes in full operation providing a total of 9,836 full-time (1,849 craft and 7,987 technician), 16,742 part-time day (12,472 craft and 4,270 technician) and 25,081 part-time evening (9,690 craft and 15,391 technician) places. Two technical colleges will be in operation by October 1993, providing a total of 4,800 full-time, 1,350 part-time day and 7,500 part-time evening places on sub-degree level courses. There is also a total of about 42,061 off-the-job training places (4,205 pre-employment and 37,856 upgrading) provided in the VTC's 18 training centers. The above pre-employment places together with the 11,700 pre-employment training places provided in the training centers operated by the Construction ITA and the Clothing ITA mean that about 15,905 persons can obtain skill training before they enter the labour market either as trained operatives or as apprentices for further training before becoming technicians and craftsmen via one of the routes.

10.23 What does all this mean?

10.24 It means that Hong Kong now has a technical education infrastructure which is attuned to the manpower structure of its industry and commerce. That is, it now has the wherewithal needed to train lower level manpower, on which industry and commerce depend, as well as manpower at the highest level, i.e. technologist.

10.25 It means that at craft and technician levels Hong Kong has the means to provide sound basic skill training to young people, similar to that given to first-year apprentices in the West, before they join employers as second year apprentices and obtain further on-the-job training and experience in their chosen trades, thereby making good the inability of most Hong Kong employers to provide sound basic training.

10.26 The expansion of facilities has enabled the technical institutes to take over most technician level courses (Certificate, Diploma) and the technical colleges to take over most sub-degree level courses from the Polytechnics, allowing the polytechnics to concentrate on technologist level courses and introduce more degree courses.

10.27 At the end of the 60s, government expenditure on technical education and industrial training was negligibly small. In the 1993-94 financial year, the budget of the VTC, which is wholly funded by government, to cover its recurrent expenditure for all its operations, is HK$1.13 billion and its budget for capital projects is HK$308 million. It has a staff establishment of 3,316 in 1993-94.

11. Development of Secondary Education and Technical Education at the Tertiary Level

11.1 Concomitant with the rapid expansion of industrial training and technical education at the craft and technician levels described in the foregoing paragraphs, there has been equally rapid development in both general and technical education at the tertiary level.

11.2 Hot on the heels of achieving universal, free and compulsory primary education in 1971, a review of secondary education in 1972 resulted in a White Paper which set the target for providing by 1979 nine years (6 years primary and 3 years secondary) of free and compulsory general education for all together with provision of subsidized Form IV places for 60% of those leaving Form III. The objective was achieved a year earlier in 1978.

11.3 A decision was also taken in the late 1960s to build a polytechnic type institution to replace the Hong Kong Technical College. This became a reality in 1972 when the Hong Kong Polytechnic took over the campus of the Hong Kong Technical College. The aim was to provide in the Polytechnic 4,000 full-time and 20,000 part-time places by mid 1970s.

11.4 One outcome of the government review of post-secondary and tertiary education in 1982 was the establishment of the City Polytechnic in October 1984 in temporary premises. This Polytechnic moved to its permanent campus in 1989/90, providing for 5,800 full-time and 5,800 part-time places in higher technician and technologist level courses.

11.5 University education has also been greatly expanded with the establishment of the Hong Kong University of Science and Technology which admitted its first students in October 1991. This university consists of a grouping of professional schools emphasizing science, technology, engineering, management and business studies.

11.6 In October 1989, the government announced a further expansion plan for tertiary education in Hong Kong. First year, first degree places planned for the academic year 1994-95 should be increased from 12.9% of the relevant age group (a target set in September 1988) to no less than 18%, that is from 10,510 places to 14,500 places. The government's plan for achieving this is as follows:

11.6.1 to expand University of Hong Kong and Chinese University of Hong Kong to 11,500 full-time equivalent (fte) students each.

11.6.2 to reaffirm previously set target of 5,070 fte for the Hong Kong University of Science and Technology.

11.6.3 within a total population of 25,200 fte students, to increase the level of degree places offered at the Hong Kong Polytechnic and the City Polytechnic of Hong Kong from 40% to 65% of their total provision.

11.6.4 to bring forward plans for expanding the Hong Kong Baptist College so as to achieve a student population of 4,000 fte on degree courses.

11.6.5 to upgrade Lingnan College to a degree awarding institution with a total student population of 2,000 fte students.

11.6.6 to establish two Technical Colleges under the auspices of the Vocational Training Council to provide for 6,750 fte places on sub-degree courses transferred from the two polytechnics.

Thus by 1994/95, there will be a provision of tertiary education places for 25% of the relevant age group in the seven degree granting institutions and the two Technical Colleges.

12. Conclusion

12.1 The foregoing paragraphs show what can be achieved when a government is determined to make up for lost time and make good the shortfall in the country's technical education and industrial training system. Hong Kong was late in starting, but once government was convinced of the measures needed, it lost no time in implementing them. The resulting rate of expansion of the technical education system in the last 2 decades has been spectacular by any standard, a record of which Hong Kong can be justifiably proud.

12.2 The factors which more than any other contributed to the success of Hong Kong's program were:

12.2.1 the formulation and adoption of a simple but sound training policy which defines clearly what is needed in the overall training of manpower and who (i.e. government and employers) is responsible for which part of the overall training process.

12.2.2 the design and adoption of a methodology which is simple and economical to operate but capable of assessing the present and forecasting the future sectoral and national manpower demand by job, level and discipline.

12.2.3 the willingness of employers (i.e. support from individual employers as well as employers' association) to be partners with government in the implementation of the program, and

12.2.4 the ready commitment of government to fund the measures necessary to bring about a system of technical education and training which meets modern day Hong Kong needs.

12.3 Manpower demand of the economy does not remain static. It changes when economic sectors expand or shrink and when one sector disappears from the economic scene or a new sector makes its appearance.

12.4 To be successful, a manpower planning and training system must be capable of detecting and measuring changes in demand and responding to these changes. In other words the system must be flexible. Hong Kong's experience so far has been that putting both technical education and industrial training under the control of a single statutory and autonomous body (i.e. the Vocational Training Council) has helped towards this end. Currently the VTC budgets its financial requirements on an annual basis. Budgeting on the basis of a longer period should further help the cause of flexibility.

12.5 Looking to the future, Hong Kong has every reason to be confident but not complacent that the system which has been developed will be able to meet the challenges of the future, given the continued commitment and support of government, employers and the community.

THE RESPONSIBILITIES OF ENTERPRISES IN TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING UNDER THE CONDITIONS OF MARKET ECONOMY

by
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With the establishment and improvement of the new socialist market economy system, enterprises-- the basic units and main actors of the market --are bound to change their mode of operation, business strategy and their relationship with the government. In order to suit the needs of market economy, enterprises will free themselves from the interventions and restrictions of the government in the planned economy system. They will cease to be completely dependent on the state and become totally responsible for their own development. They will make their own decisions, carry out their own plans, and gain or lose their own account. They will also change their business structure to suit the needs of the development of market economy and set up a new management mechanism. But there is yet another important economic activity, namely, to educate and train their employees. And to carry out this task, there must be a redefinition of the responsibilities and role of enterprises, and the way they are to participate in the effort.

The competition among enterprises in the market may appear to be just a competition of products. In essence, the real competition is on the intrinsic quality of the enterprises. And the quality of their employees is precisely one of the key factors. Therefore an enterprise must attach great importance to the employees' training if it wishes to survive in the market competition, to be full of vitality and able to respond spontaneously to the change of the market.

To improve the overall quality of employees in our enterprises is an extremely urgent task. As far as the enterprises are concerned, the first thing they should do is to gear employees' job training to the market needs as soon as possible , and to set up a new system for this purpose. This means that the enterprises must face the new situation, seize the opportunity, take up the challenge, explore and probe, test and experiment until the new system is established.

First of all, we must change the way employees' job training is managed. The enterprises must be more directly involved. We all know that there are no other organizations more familiar than the enterprises themselves with the kind of education and training the employees need. Therefore they must have a bigger say in this. Indeed they should be the chief decision-maker. Only in this way can we change the old pattern under the planned economy system when " the government gives the topic, and the enterprise writes the essay " to a new pattern based on market economy, when "enterprise sets the tone, and the education department sings".

For many years in the past, education and training for employees always followed the old pattern in which the government told the enterprise what to do. As a result, the educational thinking was rigid, school structure obsolete, teaching content divorced from productive reality, the knowledge and skill taught to the employees unsuited to the needs of the enterprises, and the education and training of the employees generally unable to produce much economic benefits. The cultural and educational level of the employees and the kind of knowledge and skills they acquire will directly affect the quantity, quality and variety of products, and in a way also affect, guide and regulate the market. So it works both ways. On the one hand, the market determines the product, the product determines the technology, the technology determines the education, and the education determines the man: But it is also true vice versa. It is quite clear that once the education and training of employees are linked to the market, a new situation will prevail, in which, the enterprises which need skilled personnel will "order the dishes", and the educational department will "cook the food ", so to speak. The natural law of " the survival of the fittest" is bound to work on all educational departments. If any training center or secondary specialized school should have the right cruuicula or educational programs, relevant to the productive reality and the needs of the enterprise and employees for mastering useful knowledge and skill, they are bound to be warmly welcomed by both the enterprise and its employees. On the other hand, if the opposite is true, then the school will wither away or find itself in a dead end. Therefore, the enterprises must take its own initiative, pay close attention to the market situation, and adjust the syllabus, curricula, teaching content, etc. as the basis of this scientific analysis and forecast of the market development, and in the course of constant adjustment of their products and the organization of production.

Naturally, the enterprise must not have an "one-man show" in terms of training and education. Closely linked as they are, education and training are not totally dependent on the enterprise. In other words, they should have some independence. The enterprises must not intervene in every detail. They should mainly concern themselves with the guidance, coordination, supervision and inspection. They should allow the educational and training departments certain autonomy. Instead of just giving them orders, they should put their relationship on contractual basis, permitting these departments to decide for themselves on new ways of running the school, the allocation of labor force and construction or renovation of the school. The school should be responsible for its own loss or gains, so that it can respond to the market signals, and seek its won development.

Secondly, the enterprises must have the urge to take things in their own hands. They must take up the responsibility to run, improve, and develop the school, so that education and training of employees can be invigorated. In the new socialist market economy, the enterprises are given this power. And they should use it effectively so as to make educational and training programs serve the needs of the enterprises for their production and development. First, they should develop all kinds of educational and training programs by themselves in conformity with the needs, except for those which might be approved by the government. Secondly, they can decide on the target group, time and level for their programs. Thirdly, they can decide the purpose and content, draw up the curriculum and the training plan, and compile the teaching materials. Fourthly, they can decide on the form of training: full-time, part-time or other forms according to needs and conditions. These are the rights as well as obligations of the enterprises. Only when they perform their duties can they have the right to run the school independently. Of course it is also true that only when they run the school independently can their education and training for employees really be rejuvenated.

Thirdly, there must be a mechanism with which to push and urge the enterprise both internally and externally to improve their education and training. This is an important part of the effort to bring the initiatives of the enterprises, the teachers and the students into full play and to make the education and training systematic, scientific and standardized. To begin with, there has to be national legislation to provide the legal basis for obligating the enterprises to undertake the education and training of the employees. Then, the enterprises must make reasonable investment in accordance with the need of the enterprises for skilled personnel so that the education and training of employees can operate normally. Lastly, there must be an overall system which links the training, testing, appraisal, job assignment and the pay rate. To be more concrete, the enterprises should develop educational and training programs in accordance with job requirements, check and evaluate them, and then pay them in accordance with their performance. But the realization of this plan requires a close collaboration between the departments of labor, personnel and education of the enterprises.

To sum up, I think that education and training of employees is an important part of the economic work of enterprises to which the enterprises have an inescapable duty. And as the enterprises begin to have more and more decision-making power, their contribution to the education and training of employees will also grow.

THE DEVELOPMENT OF VOCATIONAL EDUCATION FOR WOMEN IN CHINA

by
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Women in China constitute half of the population , and are a great social force. They have the heavy responsibility to carry on the human race. Without the equality and emancipation of women, there is no real equality and liberation of the whole of humanity. To this end, one important precondition is for them to take part in social labor. And to be able to do this, they should have an education. They should be literate and have labor skills. Among various forms of education in China, technical and vocational education stands out as more conducive to the integration of the learning of general and scientific knowledge with that of skills of production. Compared with other forms of education, it is more closely and directly linked with economic construction and social life. Our experience has shown that, technical and vocational education for women is an effective way for them to develop their capabilities, secure their rights to and benefits from work, and raise their social status.

1. Brief Introduction on Technical and Vocational Education for Women in China

Pre-employment technical and vocational education in China is mainly conducted at secondary school level. This includes secondary schools(including secondary normal schools), skilled workers' schools and vocational schools whose purpose is to train various kinds of technical personnel at secondary and elementary levels, management personnel, skilled workers and other laborers. In 1991, there were altogether 3,925 professional secondary specialized schools, 4,269 skilled workers' schools and 9,522 vocational schools in China. Among the 2.277 million students in secondary specialized schools , 45.6% (1,038,000) were girls; among the 1,422,000 skilled workers' school students, 30-40%; and among the 3,156,000 vocational school students, 45.5% (1,436,000). The percentage of girl students in secondary technical and vocational schools was the highest among all schools above the junior high level. It was also higher than the percentage (43.7%) of women in the labor force. In the past ten years, secondary technical and vocational schools have provided society with more than 6 million qualified girl graduates. And these girl students with all their intelligence and knowledge, have made great contribution in various fields to our economic construction. In many professions or jobs, they have indeed been playing the irreplaceable part of

For more than 40 years since the founding of the People's Republic, the number and percentage of girl students in various schools have considerably increased and are still increasing year by year, especially in technical and vocational schools (See the attached table). Recently, in several cities and regions more than 40 new women's technical and vocational schools have been established across the country, and those set up in Dalian, Dandong, Jilin and Qingdao are particularly successful. They have enjoyed a high reputation not only locally but even nationally and some have been designated provincial key schools. Fuzhou, Xi'an, Changsha and some other cities have set up women's senior vocational schools. There are also many other vocational schools that mainly enroll girls. These schools offer specialties in which women's position is relatively strong at present such as weaving and knitting, secretarial work, financial accounting, business & trade, nursing, tourism, garment, cosmetology, hair-dressing and preschool teaching, etc. All these have had a positive effect on improving women's social status and labor qualifications, and on increasing the enrollment and employment rate for girls and young women.

In the past few years, technical and vocational education and training for rural women have also developed considerably and won preliminary success. China is an agricultural country; 80% of her 1.1 billion people are in rural areas. Among the nation's total labor force of 580 million, 74%, i.e. 430 million are in the countryside, of whom 180 million are women, representing nearly 42% of the total rural labor force. Women have become a main force to be reckoned with in rural economy. However, the overall quality of rural women is rather low. It cannot meet the needs of rural economic development and restructuring. Therefore, it is extremely urgent to develop education for rural women in literacy and practical labor skills and provide them with the means of improving their conditions. In recent years, local educational departments and women's organizations have conducted various forms of vocational, technical, and practical skill education for rural women at different levels and through all possible channels. Organized by the departments in counties, townships and villages, these educational programs have tried to combine short-term training with systematic education, with emphasis on the former. The short-term training aims at enabling women to master one or two advanced labor skills useful for local applications, whereas the long-term courses offer women chances to learn systematic specialized knowledge and knowledge of management. According to initial estimate, more than 90 million rural women across the nation have taken part in the general training. Most of them have mastered more than two practical skills. Over 12.5 million women have received specialized professional training. And 1.5 million women have attended rural correspondence colleges, TV or broadcast schools, and technical schools. 340,000 peasant women have become village technicians. And there are now 1,067,000 women-dominated households which are designated models for their mastery of scientific knowledge and technical skills. Technical and vocational education and training have made rural women more capable, more productive and more knowledgeable, and have played an increasingly greater role in the development of agricultural production. Take rural women in Gansu Province for example. The number of households whose courtyard economy has increased their income by over Y 500(RMB)) in the very year after the training, has surpassed 1 million. This has greatly enhanced rural women's status both in the society and in the family.

2. Basic experience and main measures adopted

In the past few years, the principle of gender equality has been gradually carried out in the technical and vocational education with conspicuous results. The number and percentage of women being educated in secondary technical and vocational schools and both urban and rural vocational institutions have been considerably increased. Women's cultural & technical qualities and their competitiveness in social economic development have been raised. And the social and economic benefits derived from this are immense.

Meanwhile, vocational education has also acquired an increasing prestige among women.

A benign circle between the three--the reform and development of vocational education, the improvement of female employees' quality and competitiveness, and the economic development and social progress-- has begun to take shape.

The experience and practice of these years are summed up as the following:

2.1 The key to the implementation of the principle of gender equality in vocational education is the attention given to it by leadership at all levels and the good coordination and cooperation of different authorities.

There exists in vocational education--in enrollment and employment policies as well as in school structure and the selection of course-- the issue of protecting women's lawful rights and interests and of implementing the principle of gender equality. This however is a rather complex problem which requires joint efforts from all walks of life for its solution. Therefore, leaders' attitude and their understanding of the issue are extremely important, because they directly affect the work of the responsible departments, which further affects the implementation of related policies at grass-root level. Experience shows that where the leaders have a deep understanding of the issue, have a resolute attitude and have taken effective measures, much will be accomplished. To ensure a smooth progress in every step and in every aspect, it also requires a close cooperation of the departments of planning, education, personnel and labor etc., as well as the employers and their responsible departments. The Party and state leaders of our country, as well as leaders of local Party and government organizations give a special attention to this project. In his speech to mark the March 8th International Women's Day in 1991, General Party Secretary Jiang Zemin asked Party and government leadership at all levels to listen attentively to women's complaints, safeguard their lawful rights and interests, and try the best to solve their problems. He also said that all related circles in society should do their best to help women in a concrete and practical way. Provincial and municipal leaders such as those in Tianjin have shown great concern for this. They have included it on their agenda and have set goals and measures for their fulfillment. They have also called all related departments together to discuss such issues as the male and female ratio in the enrollment of vocational school and job assignment for female graduates so as to ensure equality between the sexes and to protect women's rights and interests.

2.2 To guarantee the implementation of gender equality in technical and vocational education, certain laws and regulations must be made, and policies formulated, and they should all be strictly enforced.

Our Party and government have devoted much attention to the protection of women's rights and interests, which have been clearly defined in the Constitution and in other related state and regional laws, regulations and documents. For example,. the Constitution stipulates that "Women in the People's Republic of China enjoy equal rights with men in all aspects of politics, economy, culture, society and family life." In April 1992, the fifth session of the Seventh National Peoples' Congress approved "The Law of Safeguarding Women's Rights and Interests in the People's Republic of China". This law specifically and clearly defines women's political and personal rights, rights to education, work, property, and in marriage and family. It is the first special law in China that provides an all-round protection for women's rights and interests. Further rules and regulations have also been issued by the State Council, among which one important aspect is to implement the principle of gender equality in enrollment and employment. For example, "The Provisional Regulations for State-Run Enterprises in Employing Workers" (July 1986) and "Regulations on Labor Protection for Female employees (June 1988)" stipulate that " where jobs are suitable for women, women should be employed".

Based on the concerned state laws and regulations, the State Education Commission has stipulated in directives on secondary specialized school's enrollment that " there should be no fixed ratio of male and female students in enrollment except for those specialties that have been approved by education departments of provinces, autonomous regions and municipalities directly under the Central Government".

The Ministry of Labor also has made it clear in the enrollment regulations for skilled workers' schools that jobs and professions which are suitable for women should enroll women, and that in enrollment, all specialties in vocational schools , with a few exceptions, should treat males and females as equals, and should enroll students on meritorious basis. It has also decided that there should be no discrimination against women, and assignment or employment of graduates should be based only on accomplishments in schools. Based on the state laws and regulations, many local government, have also worked out related policies. For example, The Beijing Municipal Government has laid down the rule that for specialties which are suitable for both sexes, students should be enrolled according to their merits regardless of sex ratio. For specialties which need a certain percentage of male students, a reasonable male-and-female ratio should be worked out in enrollment. For professions which are too strenuous and hazardous for women, only male students should be enrolled; and for those which are more suitable for females, only females should be enrolled.

These laws and policies have provided us with the basis for our work and a guidance for our action. When differences and problems arise, these laws and regulations can be used to help people find a common ground and coordinate their actions, thus achieving a better result. These laws and regulations have greatly speeded up the progress of this work.

2.3 To implement the principle of gender equality in vocational education, we must adopt vigorous measures and work with sustained efforts.

To enforce related state and local laws and regulations, and to ensure women's equal rights and interests in receiving technical and vocational education, local governments have taken many effective measures. First, they have decided that their leaders should give concentrated and personal attention to this issue during enrollment and job assignment while paying constant attention to it on routine basis for the rest of the time. Secondly, they have decided to exercise strict supervision over enrollment. Knowing that there are more female students at secondary school level, Changzhou Municipal Government has made it a rule that the ratio of female students whose files could be submitted for the recruiting process should be 1:1.2--higher than that for males, which is 1:1.1, thus giving female students a better chance to be enrolled. Thirdly, they have worked out a way to keep an appropriate sex ratio in enrollment and employment taken as a whole. To ensure the employment of more female students after their graduation, schools have signed contracts or arranged to jointly run the school with the employers. Fourthly, they have offered those young women who cannot be enrolled or employed for the time being pre-employment training. Fifthly , they have formulated policies to encourage enterprises to employ more females. For example, the labor department in Changzhou has made it a rule that textile and silk industries, which employ mostly female workers, may have the privilege of recruiting new workers either earlier than other industries or even when these industries have no quota. And the available labor quota is to be filled by female workers first. The municipal government also issued regulations on how to manage the urban female employees child-bearing fund which stipulates that urban enterprises should pay Y20 RMB annually for each employee on the payroll to the general management organization. In return, the institution will compensate for the enterprises Y700 RMB for each female employee who practices birth control. Sixthly, they have conducted investigations and researches so as to carry out the principle of gender equality in a practical way. There are physiological and psychological differences between men and women, therefore their adaptability to different jobs is also different. Equality between the sexes in enrollment and employment should refer to the rational ratio and balance in an overall sense, and should be reflected in our guiding principles and general policies. It does not mean sex ratios in every specific case will be the same. In fact sex ratios in different trades, schools, factories and enterprises may be very different. After much research and investigation since 1985, Shanghai Municipal Government has regulated sex ratios in the enrollment of skilled workers' schools and vocational secondary schools, for scores of trades and over 120 types of work. This is a very useful and significant work, and is also an important aspect in carrying out the principle of gender equality in enrollment and employment..

2.4 Strengthening publicity and promotional work and enhancing women's social status as well as personal qualities is the pre-requisite and basis of carrying out gender equality in technical and vocation education.

It is not simply a matter of managing the school roll, but rather an important social issue to realize gender equality in the enrollment of technical and vocational schools and in the job assignment for their graduate students. Therefore we must make the whole society aware of its vital importance. First, we must explain to the whole society the significance of this work. It is closely related to social stability and unity. And it concerns the protection of women and children's rights and interests, as well as the successful implementation of our basic national policy of family planning. It requires not only the related working units, but also the whole society to look at this issue from the angle of women's liberation. Secondly, State and local related laws and policies should be propagated, and brought to everybody's notice. We should make all personnel in government and related departments and through them, to other people, study and abide by the laws, establish the authority of laws and make them more aware of the importance of enforcing these laws. Thirdly, the useful experience and effective measures of various places and departments should be recommended and popularized. In June 1991, in Changzhou, the Women and Children's Affairs Coordination Committee under the State Council held a meeting on the implementation of the principle of gender equality in the enrollment of secondary schools. Representatives from fifteen provinces and cities attended the meeting. Changzhou and some other cities told their experiences. And these experiences served as examples for all others. Fourthly, women should be educated in the spirit of "self-respect, self-confidence, self-reliance and self-improvement". They should be urged to make progress, work and study hard, improve their personal qualities and to gain the recognition of the society through their own achievements and performances. Only in this way can equality between the sexes be really achieved.

3. Existing problems to be solved and measures to be taken.

In recent years, women have made much progress in achieving equal rights in technical and vocational education. But there are still problems. For example: 1) Influenced by the traditional idea that men are superior to women, sex discrimination still exists; 2) Some leaders in government departments, enterprises and schools are still shortsighted, and do not want to enroll or employ females; 3) There is uneven development in different regions and fields. Many poor and remote areas in the countryside lag behind; 4) Some women still do not have the right attitude in their choice of careers. All these problems still remain to be solved in our future work.

3.1 To deepen people's understanding is still the key to implementing the principle of gender equality.

The Fourteenth Party Congress has defined the strategic target and the program for action for our socialist reconstruction in the next ten years or longer. To fulfill this great and arduous task, we should mobilize all the forces in our country.

Women, who constitute half of the population, are one of the most important forces. Only when our women can really and fully play their role as the holders of " half the sky" can we successfully fulfill the strategic task. This understanding should guide not only those who are engaged in running women's affairs, but also people in all walks of life.

To arouse women's enthusiasm we should show concern for their weal and woe, and protect their most important rights and interests. And one of the most basic of these rights and interests is to treat women equally in enrollment and employment. To achieve this equality, and to raise women's status and quality is not only the need and pre-requisite for women's liberation, but also a great cause affecting our overall national quality and the progress of our civilization. It is a cause that will bring happiness and well-being for our country and for our future generations. Any short-sightedness, misjudgment, or error will have an accumulated result that is harmful to our nation and our country; and that will have grave consequences not only for this generation but for many generations to come.

The deplorable traditional remnants of gender discrimination still exist to a considerable degree today. Often women find it difficult to be enrolled or employed. In order to solve this problem of gender inequality, it is important for people, especially leaders at all levels to understand the issue better and improve their work on women's affairs, taking it to a new and higher plane.

3.2 Further improve related laws and policies.

Although our Constitution has provided for women's equal rights with men in five aspects, there are still not enough related laws and policies. For example, in recent years, with the change of the economic system, enterprises have adopted such reform measures as the optimization of labor combination, and the contract responsibility system for the enterprise director. But due to the implementation of certain reform policies, these measure have induced some enterprises to act only on short-term basis, thus creating a situation which is unfavorable to women's employment. This is also one of the reasons why girl students find it so difficult to get in to schools. Apart from these, there is the problem of inadequate and poorly-coordinated work assignment or employment policies and enrollment policies. Therefore the government should improve the existing policies and formulate new policies and laws, especially those that will encourage enterprises and schools to give equal opportunities to females in their recruiting policies, so as to guarantee women's lawful rights and interests.

3.3 Actively develop the service industry and technical and vocational education so as to open up new channels for women's enrollment and employment

Women have apparent employment advantages in the service industry. And with the rapid economic development and gradual improvement of people's living standard, the service industry will see even greater development. This will surely create many new job opportunities for women. Meanwhile, technical and vocational education can effectively enhance women's labor quality and their competitiveness in seeking employment. Large numbers of specialties (types of work) are now provided by technical and vocational schools for the service industry. And in these years, about 70% of all the students trained in specialized secondary schools and vocational schools are employed by the service industry. Urban vocational schools have presented even higher percentages, like that in Beijing, which is over 80%.

And over half of the female students now study in specialties are for the service industry. Therefore, the rapid development of the service industry and vocational education will greatly increase opportunities of enrollment and employment, and to enhance women's labor quality and occupational competitiveness. And based on the needs of the society and the physiological characteristics of women, technical and vocational schools have readjusted their specialties(types of work), greatly increasing those for the service industry such as: hotel service, cosmetology and hair-dressing, business service, garment-making, embroidery, secretarial work, accounting, pre-school teaching, library information and so on. We should continue our effort in this respect. In the future, the service industry and vocational education must further develop in order to open up more channels for women's enrollment and employment.

3.4 Improve our guidance to women on how to choose specialties and occupations.

Influenced by traditional ideas, some female students and their parents do not know how to choose specialties and occupations. They usually throng to those offering easy and well-paid jobs while paying no attention to those that are more suitable for women, though a little bit harder or more tiring. It sometimes happens therefore that on the one hand many female students find it difficult to get enrolled, and on the other some schools that have planned to enroll more girls cannot fulfill their quota. Similar things happen in employment. Therefore, it is necessary to tell these women that in choosing their specialities and occupations they should be realistic and should base their selection on the actual needs of national economy as well as on their personal qualifications. In this way, the problem of structural unemployment existing today can be gradually solved, and the uneven distribution of students between "undesirable" and "desirable" specialities can be changed.

3.5 Double our efforts in safeguarding women's lawful rights and interests in poor areas and remote countryside.

Concerning the issue of equal treatment for women in enrollment and employment, different regions have different situations. Relatively speaking, situations in urban areas are better whereas problems existing in underdeveloped areas, especially in the countryside, are still not easy to solve. Therefore, this part of our country needs our special attention. Efforts on this issue should be made in our future work to narrow the gap between underdeveloped areas and relatively developed ones.

Attached Table

Numbers and Percentages of Female
Students at Various levels and types of Schools

Unit: 10,000

Time	University		Middle School		Specialized Secondary School		Vocational Secondary School		Primary School	
Time	No.	%	No.	%	No.	%	No.	%	No.	%
The Highest No. & Percent Before 1949	/	17.8	/	20	/	20	/	/	/	25.5
1980	26.8	23.4	2108.1	39.6	39.2	31.5	14.8	32.7	6517.4	44.6
1985	51.1	30	1893.1	40.2	60.7	38.6	95.4	41.6	5986.2	44.8
1987	64.7	33	2018.6	40.8	52.2	45.3	116.3	43.5	5821.8	45.4
1989	70.2	33.7	1887.3	41.1	98.8	45.4	125.7	44.5	5676.7	45.9
1991	68.3	33.4	1997.6	42.7	103.8	45.6	143.6	45.5	5654.6	46.5

GEAR OUR EDUCATION TO THE COMMUNAL DEVELOPMENT ADAPT TO THEIR NEEDS AND OFFER OUR SERVICE

-- A study of the way to combine medical education with commnual public health

by Niu Tongping
Principal
Yun Cheng School of Oral Hygiene
Shanxi Province

Our school was founded in 1984 in Yun Cheng, Shanxi Province. It is a secondary specialized school mainly for the training of intermediate-level oral hygiene technical personnel.

In the past nine years, following the principle that technical and vocational education in our country must gear itself to the needs of economic construction and education must be combined with production, we have taken Yun Cheng as our experimental base, and have adopted the policy of seeking development through reforms. We have broken through the traditional educational framework and changed an academic type of medical school into a new teaching system which combines the school, the hospital and the community, and combines also our teaching with public health work, consequently both our school and the whole region's oral hygiene have achieved a rapid development.

Nine years ago, our school only had one class for primary dentists with an annual enrollment of 40 students; but now, we have fourteen classes in two specialities with 180 new recruits per year. The total student population has reached 603.

Yun Cheng is an agricultural area in which the economy has been developing very slowly. In the mid-1980s, a peasant's annual income in average was only about $100, so it was very difficult to develop education and public health. And oral hygiene was among the most neglected. We adopted the policy of facing the community and taking the initiative in adapting to its needs and offering our service so that we could develop both our education and the region's oral hygiene rapidly. We based our teaching on the actual conditions of oral hygiene in the region so as to improve this situation. To be more concrete, we did the following:

1. In view of the fact that dental diseases were rampant in this region, we decided to run our school in a more flexible way to make up for the serious shortage of dentists.

In 1986, seven sample spots were selected and an investigation was conducted on the oral hygienic conditions among 8,628 people above the age of five. The results of this survey showed that the rate of dental caries carriers was 49.77%, with 0.97% dental caries per person in the 12-year-old age group; the rate of gingivitis patients was 99.77%, and that of dental stone was 85% in the 15-year-old age group, tooth loss 53.79% in the 35-40-year-old age group, and 97.97 in the above 65-year-old age group.

But there were only 30 oral hygiene medical personnel in the rural areas of the whole region. This was an appalling gap. In order to solve this problem, we first reported this grave situation to the local governments and the community. Then we started to reform our teaching system and offer diverse curricula and programs. In addition to running the regular classes required by the curricula, we made full use of our teaching resources and set up two new kinds of class, one for training young rural dentists, the other for training elementary oral-hygiene care-takers. The former recruited graduates from the junior middle schools in the target areas. They would study for 3 years and when they finished their studies they would go back to the original village or township medical institutions and work as dentists. The latter one recruited school doctors or physiological teachers from middle schools, primary schools and kindergartens. They would receive a short-term training and then go back and work as part-time oral hygiene care-takers.

By the summer of 1992, after several years' efforts we had trained 470 intermediate-level dentists, 162 elementary oral-hygiene medical workers, and 180 part-time oral hygiene care-takers. Relying on these people, we managed to set up a network of medical organizations for the prevention and cure of dental diseases in villages, townships and counties as well as in the middle schools and primary schools.

2. We set the training of medical personnel with practical knowledge and skills as the goal of our teaching, continue to reform our teaching plans accordingly and improve our teaching quality so that the people we train will serve the needs of the countryside.

We use the word "practical" to refer to those students who have the following three qualities: a) They should love their work and be willing to stay in the countryside and serve the peasants; b)They have the ability to mobilize and organize the people to improve their oral hygiene; c) They have the knowledge and skill of preventing and curing the common dental diseases.

In order to achieve this goal of training, we adjusted the curricula and the content of our teaching, according to the principles of "3 equal stresses" and " 4 special focuses". The former refers to "equal stress on knowledge and skill, on science and service, and on prevention and cure. The latter refers to:

a. Special focus on the specialized courses. Accordingly the original five specialized courses were expanded to eight, and the class hours were increased from 738 to 1492;

b. Special focus on the training of skills. The original 408 lab-work hours were increased to 1010;

c. Special focus on courses concerning prevention. Originally there was only one such course with 30 class hours. And now it was increased to five courses with 266 class hours.

d. Special focus on the social practice. Starting from the second term of the first year, the students are organized to practise the skills they have learned in the communities and in "dental disease prevention and cure stations" at different levels for 10 weeks.

After the adjustment, the total class hours remain unchanged. The additional hours for the specialized courses and courses on prevention were taken from the course of the basic theory.

Through these adjustments, we help our students to bring about three basic changes. Firstly, their concern is no longer purely for the cure., but rather for both cure and prevention. Secondly, they now pay more attention to the people as a whole including healthy people rather than to just a few individual patients. Thirdly, they no longer just learn their lessons. They now work while they study. They have become a new type of oral hygiene medical workers capable of undertaking the responsibility of looking after people's dental health in rural areas.

3. We set up educational bases in the communities, thus conducting teaching both on and off campus so that our teaching and studies can be closely connected with the work of public health.

Since 1982, we have set up eight more educational bases in the communities in the counties of Yun Cheng, Rei Cheng, Jiang Xian, etc. What we have done is to assign each class, led by a teacher, to a county . Each class is further divided into four groups, assigned to four township clinics. And each group covers two or three villages. The schedule and their tasks are as follows:

From the tenth week of the second term in the first year, the students will spend 2 weeks on investigating the socio-economic situation, the hygienic resources and the current dental health conditions in this community. The idea is to enable the students to learn concretely what the problems are so that they can set a realistic goal and make a plan for the realization of this goal. During this period, they will choose 2-3 educated young people to be trained as dental health care-takers.

From the tenth week of the fourth term in the second academic year, the students will spend another 2 weeks in going to the middle and primary schools and the residential area to conduct a general education among people on dental health. Through this activity, the students on the one hand can learn how to organize people, handle human relationships and take measures to prevent and cure dental diseases, and on the other, the local residents and the school children there will have some basic knowledge about dental health. Meanwhile the students will start to organize medical institutions for preventing and curing dental diseases in the target townships, villages or communities.

From the ninth week of the sixth term in the third academic year, the students will spend again 2 weeks in conducting a dental epidemiological investigation and helping the local health organizations to establish the files of dental patients. They will learn how to conduct such investigations, how to make a statistical report and how to process relevant data. During this period, the students can also design and conduct some minor research themselves.

In the fourth year, for 4 weeks, the students will take turns to go to the hospitals for clinical practice or to the local communities to participate in the prevention and cure of dental diseases among local residents and elementary and secondary school students. Meanwhile, they should complete the work of organizing the model communal dental health institutions. And they should also conclude their own researches and finish their related reports.

Our experience shows that, the adoption of this kind of educational system will not only train dental health medical workers with practical knowledge and skill, who are suitable to the needs of the countryside, but also promote the development of dental health and the establishment of dental health organizations in rural areas. Nine years ago, the dental health medical workers and the population were in the ratio of 1 to 120,000 in 13 counties/towns of Yun Cheng Prefecture; now they are in a ratio of 1 to 8,000.

Nine years ago, there were only 20 medical institutions for dental health in this area, now there are 282, of which 13 are at the county level, 71 at the township level, and 189 at the village level. And there are 9 dental prevention and cure stations for middle and primary schools and kindergartens. More than one million people are covered. The situation of the people's dental health has improved considerably. The average score of dental health tests increased from 23.8 points in the past to 92.6 points now; the percentage of people who brush teeth regularly has increase from 39.12% to 80.8%; the rate of dental carries' filling increased from 11.18% to 70.50; the index of bacterial stains reduced from 2.35 to 0.98; and the rate of checking out dental stains reduced from 85% to 50.7%. On the basis of our calculation, by the year 2000, the network of dental prevention and cure in the whole prefecture of Yun Cheng will be by and large completed. At that time, the task of our school will have to shift to the continuing education of dental health workers at the county, township and village levels.

Appendixes:

Agreement on Mutual Obligations of the School and the Community

The new teaching system of combing schools, hospitals and communities means that education and the work of public health must be closely connected. Therefore in order to make this new system work, both the school and local communities have certain obligations which should be clearly defined and agreed upon:

1. The obligations of the school are

-- to students

a. To make teaching plans, decide on the courses and curricula, design educational activities and work out the schedule.

b. To enroll new students, divide them into classes, and decide machanism of management and the staff to run the school.

c. To deliver the courses on literary and general knowledge courses, on basic medicine and specialized theories, and teach the students to do lab work.

d. To conduct examinations tests and job-appraisals; to administer the assignments of students, and to carry out feedback investigation so that the school's teaching can be improved and the teaching plans revised.

to the community

To conduct investigations on socio-economic conditions, oral hygiene resources and dental epidemiology with the help of local professional people. To establish files and analyze the needs or demands for dental health .

To help the communities to make plans for improving people's dental health.

To conduct education among the people on oral hygiene, give local residents, especially students the basic knowledge and help them form the habit of brushing teeth as well as other habits good for dental health.

To train, free of charge, three to five medical personnel for dental health.

To do the work of preventing and curing simple dental diseases for example, cleaning, extracting and filling, etc.

To help the target districts, townships and villages to establish institutions for preventing and curing dental disease, to set up or perfect various kinds of working systems such as the health education system, the general investigation and medical treatment system, the technical operation rules, the indexes of monitoring and the charging rate, etc..

2. The obligations of the community are:

a. To include the teaching of our school in the Public Health Plan of the local government to ensure good co-ordination. For this purpose, the deputy governor of the county in charge of education and public health will help to decide on the target townships and villages, and to solve problems that we come across.

b. To assign a deputy director of the Bureau of Public Health of the county to be the deputy head of the class sent to work in that county from the medical school to help with the execution of their education programs.

c. To help the teachers and students solve the problems of food and lodging during the time they work in the community.

d. To choose 3-5 young graduates of junior or senior middle schools or village doctors who are dedicated to the community's public health work to be trained together with the students of the Medical School to become dental health medical workers for that township or village.

e. To help draw a plan for the community's dental health and see to its realization.

f. To establish medical institutions for preventing and curing dental diseases at the township and village levels; To secure places for their operation and raise the necessary funds for the purchase of equipment.

g. To launch an educational movement among the local people so that all dental health programs will be carried out according to the plan; and to coordinate with the school in the mid-term and end-term appraisal of the teaching.

All these obligations mentioned above will be put in a contract, signed by both the authorized representatives of the school and the community with concrete stage-by-stage plans for its successful execution.

THREE PROBLEMS FACED BY CHINA'S TECHNICAL AND VOCATIONAL EDUCATION EN ROUTE TO MARKET ECONOMY

by
Prof. Meng Guangping
Central Institute of Vocational and
Technical Education
State Education Commission

1. Basic Mode of Technical and Vocational Education (TVE)

1.1 The basic mode in China today is school based.

In 1992, there are, all over the country:
2,984 secondary technical schools , with an enrollment of 1.743 million;
4,392 skilled workers' schools, with an enrollment of 1.556 million;
9,860 secondary vocational schools, with an enrollment of 3.428 million;
99 vocational universities, with an enrollment of 66,000;

In total: 17,335 schools 6.793 million students

The above are all formal schools which represent the main body of TVE in China.

1.2 School-based education was not purposely chosen as basic mode in China but grown out of historical reasons.

1.2.1 In the beginning of 1950's, China was engaged in a series of key construction projects with the aid from the former Soviet Union. Alongside with these projects, the Soviet model of secondary technical schools and skilled workers ' schools were also adopted, and became the main body of TVE in China from 1950's to 1970's.

1.2.2 In the "Cultural Revolution" started from 1966, TVE was criticized groundlessly. As a result, most of the technical and vocational schools were closed down while general senior secondary schools were expanded blindly. Secondary education, thus, consisted mainly of general senior secondary schools. Since the end of the 1970's, part of the general senior secondary schools had to be converted to vocational schools so as to meet the requirements of economic development, and consequently strengthened the mode of school-based education.

1.3 The current school-based mode is hard to carry on, and it should be reconsidered from a strategic point of view.

1.3.1 One of the difficulties facing education in China is insufficient educational input from the government versus a very large population to be educated. This situation may not have a significant change in the near future.

The school-based education mode requires sufficient governmental input which is beyond what China can afford.

1.3.2 Nor enterprise-based training mode could become the main one for the future TVE in China, as most enterprises are small insize and weak in strength, and as for the few big enterprises, most of them (except a few) also do not have a very strong financial power, therefore, it's very difficult for them to offer training independently.

1.3.3 The only logical choice is the co-operative mode of the enterprises and the schools, pooling the advantages of both together.

2. The reform and development of curriculum

2.1 Under the planned economy system in the past, as there was no labor market, the graduates of technical and vocational schools were assigned by the State to workplace., The training programs and curriculum design could not be adjusted on time according to the actual employment needs..

The contemporary curricula of TVE in China, are usually too theoretical while too weak on practical training.

2.2 In the transformation towards market economy, the enterprise demands on the qualification of employees will become more sensitive and diversified . The curriculum designs and developments need to be reformed on the basis of employment competence. This will bring about a series of reforms in development of courses, learning and teaching methods, testing standards and methods and teachers' training.

2.3 The fundament of competency-based education is occupational classification and job analysis. China should establish her own occupational classification and analysis on her way towards market economy. This is a massive task which should start as soon as possible, the sooner the better.

3. The establishment of a system coordinating pre-service training and in-

service continuing education

3.1 China has a very large adult education system .

In 1991, there are:

1,256 adult universities, with an enrollment of 1.476 million;
1,869 secondary technical schools for workers, with an enrollment of 439,000;
375 secondary technical schools for farmers, with an enrollment of 115,000.

Most of the courses offered in the above schools are technical and vocational by virtue and of a formal schooling nature, but they are independent from pre-service TVE, forming two separate systems.

3.2 In the transformation towards market economy, the demands of labor market will undoubtedly promote the development of in-service training and job-transfer training. These trainings are mostly non-formal, and should be coordinated with pre-service education, forming an unified system.

3.3 The pre-requisites for the establishment of a system coordinating pre-service training and in-service continuing education are well-developed occupational classification as well as sophisticated work of job analysis .

Annex I

AGENDA

INTERNATIONAL SYMPOSIUM ON TECHNICAL AND VOCATIONAL EDUCATION

(13-18 September 1993, Beijing)

1. Opening of the Symposium

2. Election of the Chairperson of the Symposium

3. Election of the Vice-Chairpersons and the Rapporteur

4. Adoption of the Agenda of the Symposium

5. Field visits technical and vocational education institutions

6. Presentation and discussion: The role and function of technical and vocational education in the national socio-economic development;

7. Presentation and discussion: The role, function and participatory mechanism of enterprises in technical and vocational education;

8. Presentation and discussion: Sources of funds and teaching staff concerning technical and vocational education;

9. Presentation and discussion: Levels, system of schooling and management concerning technical and vocational education;

10. Presentation and discussion: Promotion of international, regional and national cooperation;

11. Adoption of the final report

12. Closing of the Symposium

OPENING SPEECH BY MR. LI LANQING, VICE-PREMIER OF THE STATE COUNCIL

Distinguished participants and guests,

Ladies and gentlemen,

I am very pleased to meet you here today. At the outset, please allow me, on behalf of the Chinese government and in my own name, to express my warm congratulations to the convening of the International Symposium on Technical and Vocational Education and welcome to all the participants from abroad.

Peace and development are the two main themes of the world and the modernization is the very goal that each nation is committed to achieve. In such circumstances, technical and vocational education is one of the principal pillars supporting the modernization drive. In every country, modernization not only needs many high-caliber specialized personnel, but also demands for great quantity of medium level human resources and trained workers. The training of the later in reality depends on technical and vocational education. Therefore, technical and vocational education is keenly relevant to the quality and speed of the modernization drive, and at the same time it is important means and strategic measures to promote scientific and technological progress and social advancement.

Along with the continuous strengthening of the global economic links, it is a natural trend for the countries to increase exchanges in the field of technical and vocational education. We have noted that each technical and vocational education has its own distinct features, therefore, exchanges and cooperation are not only beneficial to its own development but also to the advancement of each country's economic development. We highly appreciate and thank UNESCO for its constant efforts to this end. The current International Symposium on Technical and Vocational Education supported by UNESCO, is of important practical significance. As science and technology play a daily increasing role in economic development, and the change of world economic pattern and structure, the reform and development of technical and vocational education are placed in a more important position. We wish the symposium a success and expect that it play an active role in promoting the development of technical and vocational education as well as each one's economy.

Being a developing country, China along the policy of reform and opening to the outside world in the last decade, has speeded up its economic development. At the same time, its technical and vocational education has also gained marked progress, in particular the secondary technical and vocational education. In the last two years, China has further accelerated its pace of economic development and opening to the outside world and sent its modernization drive into a new stage. The new situation sets a higher and more urgent requirement for technical and vocational education. However, China's current technical and vocational education can not by and large cater to the needs of economic and social development and still has many difficulties and problems waiting to be tackled. Therefore, the Chinese government shall attach greater importance to technical and vocational educational education and expects to hear your advice and suggestions so as to achieve its further development.

Ladies and gentlemen,

Reform and opening to the outside world is the basic national policy of China and will not change in a long run. Under the auspices of such a policy, we shall further deepen the reform of technical and vocational education and the opening to the outside world. China is ready to continue its exchanges and cooperation with other countries and international organizations. It is expected that the current symposium would strengthen China's links with the world and establish friendship. You are welcome to visit my country often since China's door to the world is always open.

In conclusion, I wish the symposium every success, a greater development of your technical and vocational education and a pleasant stay in Beijing.

Thank you.

SPEECH AT THE OPENING CEREMONY OF THE INTERNATIONAL SYMPOSIUM ON TECHNICAL AND VOCATIONAL EDUCATION

by
Mr. Wang Mingda
Vice-Chairman of State Education Commission
People's Republic of China

Fellow Delegates and Friends,

With the support of UNESCO, the International Symposium on Technical and Vocational Education jointly organized by China's State Education Commission and the Chinese National Commission for UNESCO opens today. First of all, I would like to, on behalf of the State Education Commission and the Chinese National Commission for UNESCO, extend a warm welcome to the participants from various countries and international organizations.

China, in its long history of educational development, has a tradition of attaching great importance to education. But in old China, TVE was very underdeveloped because of the backward economy. At the beginning of this century, some intellectuals with insight, with a view to promoting TVE, established the TVE Society of China in 1917, which was the first institution of its kind. Limited by the social conditions of the time, however, TVE remained underdeveloped. After the founding of the People's Republic of China in 1949, to meet the requirements of economic construction, a number of specialized secondary schools and skilled worker schools began to be established in the 1950s. With the adoption of the policy of reform and opening to the outside world at the end of the 1970s, economic construction put on speed. In accordance with the needs of the modernization drive, the Chinese government has taken a series of measures to adjust the structure of secondary education with focus on TVE, bring about a rapid development of vocational senior secondary schools. Two national meetings on TVE have been held since 1985, and the State Council issued "Decisions on the Massive Development of Technical and Vocational Education" in 1991. Thanks to all these, TVE has achieved unprecedented growth. By the end of 1992, there were over 16,000 vocational senior secondary schools, general specialized secondary schools and skilled worker schools, with an enrollment of 6.83 million. For senior secondary education, students recruited by all kinds of technical and vocational schools account for 53.8% of the total. Besides, we have set up a few tertiary technical and vocational schools and, in the rural areas, widely developed diversified technical and vocational education at the primary level. At the same time, a large number of employment training centers and training institutions for adults have emerged, providing training to tens of millions of people every year. TVE has played an important role in the economic and social development of our country.

The development of socialist market economy in China presents new and higher requirements for the quality of the labor force, and it has become a more urgent task to develop and upgrade TVE. The Educational Reform and Development Framework of China, promulgated by the Chinese government early this year, requests governments at various levels to give priority to TVE, which has since been gaining speed in its development. We are striving to establish by the end of this century a basic framework of TVE system, ranging from primary to higher levels, covering all trades, having a reasonable structure and diversified forms, and converging with other educational systems in a harmonious development process. TVE in China will expand considerably and reach a new height.

Fellow Delegates and Friends,

TVE, as an important pillar in the modernization of production and service, is an essential component in modern education. Only quality labor force can make quality products and render quality service. On the threshold of the 21st century, it has become a common trend for the countries of the world to attach great importance to TVE. The convening of this symposium entitled TVE and Modernization provides us with an excellent opportunity to exchange our views and cooperate in this field. We would like to take advantage of this symposium carefully to study and learn from the advanced experience of the other countries in this respect so as to promote the development of TVE in China.

Last but not least, I would like to extend my sincere thanks once again to UNESCO for its support to this symposium. We hope that UNESCO will take various measures to strengthen the exchange and cooperation among countries in the field of TVE. China will actively support and participate in the relevant activities conducted by UNESCO.

I wish the symposium a great success!

I wish all of you a pleasant stay in Beijing!

Thank you!

Annex IV

SPEECH AT THE OPENING CEREMONY OF THE INTERNATIONAL SYMPOSIUM ON TECHNICAL AND VOCATIONAL EDUCATION

by
Mr. Hedayat Ahmed
Director
UNESCO/PROAP, Bangkok

Your Excellency, Mr. Li Lanqing,
Excellencies,
Distinguished Delegates,
Ladies and Gentlemen,

Kindly allow me, Your Excellency, to convey to you and to all the distinguished delegates attending this meeting, a very warm welcome on behalf of the Director-General of UNESCO, Prof, Federico Mayor, on this auspicious occasion of the opening of this International Symposium on Technical and Vocational Education. UNESCO considers itself really privileged to have been invited to associate itself with this important international meeting in a key area of national, regional and international importance as a follow up to the World Conference on Education for All and the recent Regional Conference of the Ministers for Education and those Responsible for Economic Planning in Asia and the Pacific, UNESCO wishes to compliment the Government of the People's Republic of China in taking this bold initiative to convene this meeting at a point when the deliberations and recommendations of last Regional Ministerial Conference are still resounding particularly concerning Education for All and Technical and Vocational education.

Ladies and Gentlemen!

Education, as we all know, is not only instilling knowledge but awakening the enormous creative potential that lies within each individual enabling him or her to develop his or her fullest potential, and better contribute to the societies in which we all live. There is no disagreement that education in all its forms is essential in moving through greater awareness, increased knowledge and improved capacity building towards sustainable development. However, when it comes to access to appropriate knowledge and transfer and sharing of such knowledge education assumes critical importance in view of its vital role in providing the basis for development which is truly endogenous and compatible with values, ethics and cultures of societies. It is important to note here and I would like to underscore this point that national resources only become a factor of development through the human capacity to transfer them. As this capacity is provided by education it, therefore, has always been and continues to be the key to all transformation and sustainable development.

With the transition of the globe into the information era, the world today is a global society. The first and the foremost priority of this society is education and in education, the "Education for All" including the elimination of the illiteracy that still afflicts some 1 billion people throughout the world, of which three-fourth are still in our region. The last Ministerial Conference (MINEDAP VI), therefore, once again reiterated concentration of efforts on achieving "basic education for all" as the absolute priority by the turn of the century including literacy for all people so as to enable them to participate fully in development. The Conference also called for looking beyond basic education particularly towards technological literacy ad providing know how and life skills for people to cope with the rapidly increasing influence of technology in society.

Distinguished Delegates!

In this task of looking beyond basic education and equipping school-leavers with skills, technical and vocational education and training figures out most prominently as a great responsibility and the biggest challenge to education systems in creating, sustaining and accelerating national productivities. UNESCO has been consistently pursuing programs to support the efforts of the Member States to link education systems more closely with the world of work and to promote improvement of technical and vocational education in the light of changing employment and societal needs. It is particularly noteworthy that TVE now occupies a significant place in national education policies. It is also regarded as a crucial component of national development.

The Ministers' Conference viewed technical and vocational education as one of the immediate priority concerns for the entire region of Asia and the Pacific. The Conference considered it as a key determinant of high economic growth rates, in spite of its high per capita cost and productivity. The Conference urged the necessity of its further development and improvement to enable the developing nations to cope with the rapidly changing needs of the work place and employment markets.

UNESCO firmly believes in continuing to accord a high priority and appropriate resources to education and the world of work. UNESCO is fully aware of the growing concern of its Member States to assist in a better match of technical and vocational education and the employment prospects. This is precisely the main aim of UNESCO's newly launched International Project on Technical and Vocation Education (UNEVOC). It will foster the exchange and transfer of knowledge of the kind UNESCO is promoting through its UNITWIN - University Networking Project - designed to reinforce North/South, South-South and East-West intellectual co-operation in this newly emerging field of regional and international co-operation. The project will support co-operative development and updating of curricula and material as well as training of key personnel through innovative modalities and methodologies. It will also promote development and integration of informatics and its use in TVE systems to enable them to pick up a jump start for invigorating existing infrastructures in the Member States.

UNESCO regards the lead taken by China in convening this International Symposium as the foundation laying of a program of regional and international networking in technical and vocational education. On behalf of UNESCO, I wish to assure our hosts and other Member States present in this important meeting of our full support and responsiveness at all times in your efforts of improving your systems of technical and vocational education. I am sure you will all agree with me when I pronounce that our aim should be to provide technical manpower for tomorrow's needs rather than prepare young people for jobs of yesterday. I wish you all success in your stupendous task and deliberations.

Annex V

FINAL REPORT

Chapter 1

Introduction

Background and Scope of the Symposium

Within the framework of the Participation Programme approved by UNESCO, the Government of China acted as gracious hosts for the International Symposium on Technical and Vocational Education which was held in Beijing, People's Republic of China, from 13 - 18 September 1993. In cooperation with UNESCO, it was organized by the State Education Commission and the Chinese National Commission for the United Nations Educational, Scientific, and Cultural Organization (UNESCO).

The purpose of the Symposium involved the promotion of the development of technical and vocational education (hereinafter referred to as TVE) of all countries by the strengthening of international exchange and cooperation, sharing of experiences and study of problems of common concern.

The Symposium aimed at discussing how to further develop TVE so as to make it contribute to national socio-economic development, with a concentration on the following five key topics: the role and function of TVE in socio-economic development; the role, responsibilities and participatory mechanism of enterprises in TVE; sources of funds and teaching staff concerning TVE; levels, systems of schooling and management concerning TVE; promotion of international, regional and national cooperation.

Representatives were invited from 20 countries and regions which have distinctive features in the field of TVE. The participants in attendance were decision makers, planners, administrators, and specialists in the field of technical and vocational education. Representatives from UNESCO and the World Bank were also invited. A list of participants is attached as Annex IV.

Organization and Preparation of the Symposium

The Symposium was a follow-up activity to the World Conference on Education for All (Jomtien, Thailand 1990) jointly organized by UNESCO, UNDP, UNICEF and the World Bank. TVE, as an integral part of Education for All, was discussed at a special workshop during the Sixth Regional Conference of Ministers of Education and Those Responsible for Economic Planning (MINEDAP VI).

The MINEDAP VI Conference viewed TVE as one of the immediate priority concerns for the entire Asia and Pacific region. It affirmed that further development and improvement could enable developing nations to cope with the rapidly changing needs of the workplace and employment markets.

The visiting participants were appreciative of the arrangements made by the Chinese hosts that helped to ensure a successful symposium. They would suggest to UNESCO that future seminars etc. could be further enhanced by:

--considering mechanisms for achieving a better dialogue between the visiting experts and observers from the host country;

--providing more opportunity during field visits for bilateral dialogue between the visiting experts and the staff and students;

--including representatives and observers of industry and organized labor;

Opening

The Symposium was inaugurated at 10:30 on 13 September 1993 in the Fragrant Hills Hotel, in the presence of the Honorable Mr. Li Lanqing, Vice-Premier of the State Council of the P.R.C., Mr. Zhu Kaixuan, Chairman of the State Education Commission of the P.R.C., Mr. Wang Mingda, Vice-Chairman of the State Education Commission of the P.R.C., and Mr. Hedayat Ahmed, Director of UNESCO Bangkok, Principal Regional Office for Asia and the Pacific (PROAP).

Speaking first, H.E. Li Lanqing, Vice-Premier of the State Council, on behalf of the Chinese Government, extended a warm welcome and announced that "Peace and development' are the two main themes of the world, and modernization is the very goal that each nation is committed to achieve." He underscored the importance of TVE in supporting modernization and accelerating the pace of development. He reiterated that the quality and speed of the modernization drive is highly dependent on TVE and urged its development in consonance with the changing needs of the time.

Mr. Li Lanqing expressed his desire for participants to share their experiences and advice so that further development could be achieved. He affirmed that China is ready to continue its exchanges and cooperation with other countries and international organizations.

The opening session was also addressed by H.E. Mr. Wang Mingda, Vice-Chairman of the State Education Commission, who acknowledged the support of UNESCO, State Education Commission, and the Chinese National Commission for UNESCO and expressed his warm greetings to all participants.

He pointed out that TVE is developing very quickly and playing an increasingly important role in development. He called for integrating basic TVE framework in all levels and types of education from primary to higher levels in view of its critical importance for the modernization of nation. He strongly asserted that "only a quality labor force can make quality products and render quality service".

Finally, the Director of UNESCO Bangkok, PROAP, Mr. Hedayat Ahmed, on behalf of UNESCO's Director-General Mr. Federico Mayor, expressed his warm welcome and pleasure to have been able to represent UNESCO at this important international symposium. The MINEDAP VI conference called for looking beyond basic education particularly towards technological literacy and providing know-how and life skills for people to cope with the rapidly increasing influence of technology in society. In this respect he articulated UNESCO's role for TVE which is to "provide technical manpower for tomorrow's needs rather than prepare young people for jobs of yesterday."

Work of the Symposium

Proposed by Mr. Mohammad Ilyas of Pakistan and seconded by Mr. Griff Lewis of Australia, Mr. Wang Mingda, Vice-Chairman of the State Education Commission of China was elected Chairperson of the Symposium by acclamation and assumed office.

The Symposium then adopted its provisional agenda and elected the following as Vice-chairpersons, Rapporteur General, and Group Rapporteurs:

Vice-Chairpersons

Mr. Lee Mu-Keun, Republic of Korea
Mrs. Gisela Dybowski-Johannson, Germany

Rapporteur-General

Mr. Norman Fisher, Australia

Group Rapporteurs

Mr. Musa Daji Abdullahi, Nigeria
Mr. William Day, Canada

Chapter 2

Overview of Technical and Vocational Education

Introduction

In developing its overview of the current state of Technical and Vocational Education, the Symposium drew on some 20 country and regional reports and 21 supplementary papers in addition to the formal plenary presentations, field visits and associated discussions. Limitations of time, complexity of issues and mix of countries, means the resulting overview should not be regarded as comprehensive or detailed. Nevertheless, the Symposium noted that this is still one of the first authoritative overviews of international TVE produced under international auspices. The dynamics of TVE in this decade mean, however, that this general overview will need early updating. For that reason the Symposium considered that it would be helpful if such overviews become a regular task for an appropriate international agency or mechanism.

The Symposium was also aware that while a-set of substantially agreed concepts and terms are emerging in such discussions of TVE, there is still much diversity in the statistical recording and terminology of TVE activity and performance. Both of these issues merit international attention as they are essential to effective understanding of policies and practice and to comparisons of performance.

The Condition of TVE

Although all countries have some form of TVE, there is more divergence in the nature of the roles, structures and arrangements, than is to be found in other sectors of education. This disparity reflects particularly the differences in the stage of economic development, for these impact directly on skill requirements and the nature of industry. It also is a product of social development as reflected for example, in literacy levels and the role of schools.

Despite the diversity, almost all countries reported that reform of TVE is now a growing national priority, as a key means to enhanced economic and social development. In some countries the pace of reform is already quite rapid and the scope comprehensive, while in others the changes are more selective and measured. Despite the variety of reform there is a substantial convergence as to the key issues being addressed both at the national and institutional/enterprise level.

Key Issues in Reform of TVE at National Level

In many developing countries, secondary schools have played a key role in TVE, while in many developed countries TVE is the principal responsibility of post secondary education institutions. The Symposium noted that the progression of countries, from developing to industrialized, appears to change the balance of responsibilities between schools and post secondary institutions. The emergence of knowledge-based economies is also changing the balance between post secondary institutions and both universities and industry. There is a clear scope for further international research to clarify the reasons and processes for these transitions in roles and responsibilities, to aid countries in their policy development for TVE.

Some countries also noted that there is change occurring in the role of different levels of government, in the relative significance of formal and informal mechanisms, and in the balance between public systems and private services.

A major constraint on upgrading the contribution and performance of TVE is seen to be the widely perceived low public standing of TVE. This low regard reflects, in part, the superiority claimed for general education, the social aspirations of students and families to access high status careers through universities, and perceived in-efficiencies in the performance of TVE in delivering demonstrable work skills for industry. The Symposium considered that the standing of TVE needs concerted effort in countries to overcome, and these efforts would be aided by co-operative work at regional levels to develop analyses of the sources of public standing and action strategies to be changed.

All countries are using their TVE to ensure that youth obtain some pre-employment vocational skills or entry level training. However, several countries stressed that it is no less important that TVE contributes to upgrading the existing adult workforce, as they will form the majority of the workforce for the next two decades. The Symposium called upon countries to review the adequacy of action to upgrade the skills of adult workers and to establish an appropriate balance between youth and adult training, that is consistent with short and long term economic and social development, and demographic characteristics.

This discussion led a few countries to report on their recent commitment to quantitative targets for skill levels to be achieved at future key dates. Such "national skill targets" encompass both prospective entrants and the existing workforce, and encourage systematic monitoring of TVE progress and achievements. This appears a useful initiative worthy of emulation.

Key Issues at Institutional/Enterprise Level

There were many issues identified at the level of TVE systems of institutions and enterprises in the planning, operating and monitoring of TVE. There was also significant consensus on the importance of a few key issues.

While in some developing economies the traditional vocational skill requirements are changing relatively slowly, other developing countries have reported concerted action to accelerate skill development in agriculture and other traditional industries. Both industrializing and developed countries are aware that the pace of technological change, changes of industry mix and changes in workplace organization, are making the identification and delivery of skill requirements by TVE far more challenging. Not only are traditional occupations disappearing or collapsing into groups of competencies, but workers can now expect several changes of occupation in a lifetime. Thus, initial vocational education of youth for a specific occupation might be less useful than previously and would clearly not meet the need for continuous or life-long vocational education.

There was acknowledgement that traditional modes of TVE have often been too pre-occupied with the theory aspects of vocational skills, so that practical performance of graduates fell far short of industry needs. In this regard some of the causes of this deficiency are obvious -- budgetary restrictions, inadequacies in teaching and equipment, poor links with industry and the labor market -- but are not easily solved. On the other hand, there is interest in the experience of some countries in meeting this issue by developing industry skill standards as the basis for curriculum development, teaching, and assessment.

A major constraint in most countries involves the recruitment, education and retention of teachers who are both experienced in practical skills, expert in theory and effective in pedagogy.

Most countries are developing the TVE capability to increase the intake of students, the amount of vocational education they received and the availability to industry for graduates. Several countries also reported on steps being pursued to improve the quality of TVE, including not only its relevance to the experience of industry but also the interests of workers, through, for example, inclusion of the study of occupational health and safety.

Recent International Developments

Countries have welcomed the growing interest of international agencies in the development of TVE, and the work proceeding under UNESCO auspices, especially the UNEVOC cooperative project. There was also recognition that multilateral financial institutions, especially the World Bank and Asian Development Bank, are developing their expertise in, and support for, TVE.

The Symposium noted that there are other interested and related UN agencies . In this respect they sought some clarification of their relative roles and responsibilities with regard to TVE.

Finally, several countries drew attention to the potential for concerted approach to the development of TVE in the Asia-Pacific region, especially if the interests and activities of key regional bodies such as APEC/SEAMEO etc., could be properly harmonized.

Conclusion

The dominant emphasis in this overview has been the role and contribution of TVE to economic development. However, this by no means implies that there was any support for downgrading the role of TVE in achieving social justice, both with respect to the role of unions in representing workers' interests in TVE, and also its critical contribution to upgrading employment opportunities for women and disadvantaged groups.

The role of TVE in economic and social development is now receiving much greater attention by governments, just at the time when the linking of training to rapidly changing industry and technology requirements is becoming more difficult. In response to this challenge, there is ambitious and widespread reform now occurring in most countries, addressing very similar issues in the nationally appropriate way. There is a clear scope to improve the effectiveness of these reforms by better regional and international co-operation. With such assistance and greater sharing of experience, the Symposium was confident that the TVE sector will master the new challenges to be faced.

Chapter 3

The Role and Function of Technical and Vocational Education in the National Socio-Economic Development

1. Observations

The world has become increasingly aware of the predominant influence of technology in socio-economic development. Therefore any nation that seeks to prosper in this modern age must find some means of imparting technological know-how to its citizens. This can best be done through a properly organized and well articulated TVE system geared towards achieving the following identified roles:

a. For youth, TVE is the bridge from home and school to independence and work. The individual is more attractive as a potential employee, and is more productive after hiring.

b. For the adult, TVE enables upgrading and updating competencies throughout working life and helps to raise their sense of personal worth and social status. It can also increase the possibility of social mobility and life-long learning.

c. For the economy, TVE provides the necessary base for efficient production of goods and services, and creation of new wealth. It increases the rate of national economic development. Where the rate of technical change proceeds faster than change in training, economic development is retarded; where it is the same development is enhanced and social dislocation is reduced. It enables smooth change at the enterprise level, and structural change in the economy as a whole.

d. For the society, TVE is a stabilizing force. It gives youth an identity, a sense of place and future; it gives adults a means of dealing with economic change; it assists in generating the new wealth required for desirable social development and services. It is an alternative to academic education that provides a realistic and valuable set of personal goals, combined with the possibility of new wealth creation. It enables the spread of science and technology, and therefore the enhanced well-being of society.

2. Issues and Problems

Decision makers in government and enterprises seem not to pay adequate attention to TVE despite the fact that it plays a significant role in economic development. Thus, inadequate resources are being allocated to TVE. The result is that TVE assumes low status vis-a-vis the other demanding sectors. This is evident in the industrialised and the developing countries. So we see TVE regarded as the refuge of those who are not academically gifted. Specific difficulties include:

a. In many situations, students observe rather than participate in activities related to their training.

b. Without a vision of the future, and the matching of training to need, TVE is less effective than it could be, both in enabling students to find work, and in ensuring an adequately skilled workforce.

c. Lack of basic scientific knowledge, mathematical skills, and literacy is a major block in most countries to developing the workforce.

d. Cost of instruction per learner at the secondary level is higher than general/academic education.

e. TVE systems themselves can be slow to change, and may not reflect the actual changes that have occurred in the world of work.

f. Family level concern with social status and opportunity is often at odds with the actual needs of the economy and society-- this results in less real opportunity for everyone; overly large general academic systems, and underfunded vocational/technical systems.

g. There is a general lack of adequate information on the current and future needs of the economy -- at the country, regional, and international level. Thus, it is difficult to plan effectively, and to ensure that TVE is as efficient and effective as possible.

All these factors affect the status and perceived importance of TVE.

3. Strategies for Solutions

The problems of TVE are not insurmountable. They can be solved if the various parties involved could adjust their attitudes and priorities.

The imperative of engendering national prosperity and enhancing individual employability, means that finding solutions to the problems of TVE becomes a necessity. The following principles should be followed by governments, training institutions and enterprises:

a) TVE must be part of a total life-long learning system that includes both academic and TVE systems -- thus allowing choice and opportunity for all learners not only in youth, but throughout adulthood, while reducing the artificial status differences between the two kinds of education.

b) General/academic education and TVE must both be recognised by government and employers as being essential complements for adequate, productive citizenship.

c) Costs of TVE should be shared, just as benefits are shared. The individual (or family), the enterprise, government, (and organised labor where appropriate,) all have an interest, and gain benefit. They should cooperate in funding institutions and supporting their students.

d) Enterprises and organized labor should be provided with incentives for involvement, possibly through substantial tax incentives.

4. Recommendations for Action:

Actions should focus on specific situations. There are no uniform solutions, although there is scope and need for international and regional cooperation and information sharing.

a) Governments should legislate to encourage and induce enterprises (public and private) to engage in TVE through such mechanisms as tax incentives, and/or levies.

b) Governments should establish organisational structures that encourage and ensure a flow of information regarding TVE and relevant data between countries and regions, e.g., UNEVOC.

c) Countries should focus energy on the reform of existing curricula and institutional patterns of behavior so that V/T and general/academic education are linked at all levels and are available to adult learners in a practical way.

Chapter 4

The Role and Function and Participation of Enterprises in Technical-Vocational Education

1. Observations

As noted, enterprises play a crucial role in TVE. Industry is the consumer of the TVE products and as such it has a right to influence strongly basic training requirements. Indeed, in some countries like the USA, Brazil and UK, business and industry are a dominant influence on TVE. In most countries government plays the primary role.

In order to ensure proper match between the products of TVE schools and the demands of business and industry, there is need for analyses of labor markets to ensure adequate assessment of human resources. This will ensure that the needs of the community are met as well as realising the goal of reducing unemployment. The following observations are made in relation to cooperation between enterprises and TVE:

a. Cooperative education provides an opportunity for practical experience, assessment of possible new employees, paid work, immediate productivity and refreshment and upgrading of teachers.

b. Technical-Vocational institutions can provide enterprises with technical expertise.

c. Enterprises can provide:

i -- forecasts of need and changes in production and services.
ii -- assistance and direction in development and revision of curriculum.
iii -- a practice base for students
iv -- training and refreshing of teachers; provision of experts for teaching
v -- funding and in-kind assistance
vi -- evaluation of training, students, and graduates.

d. Enterprises of all sizes can and should contribute --the large enterprise through direct training; the small enterprise through advice and assistance to institutions and job placement.

2. Issues and Problems:

It is seen that business and industry can prefer training its own workforce to being involved with external TVE institutions. In many cases employers prefer mature men and women rather than the training of the youth, unless already employed. However, there are other general problems.

a Training is often viewed as a cost of production, rather than an investment. This is specially the case in countries with a highly mobile workforce, where the employer fears that workers will leave, taking their expertise with them.

b Appropriate status and the value of TVE are not recognized by enterprises themselves.

c Governments are not adequately aware of their dependence on a well trained workforce.

3. Strategies for Solution

Strong linkage between the institutions, business and industry and the community is necessary. In this way the curriculum is made relevant and the students find ready acceptance in the world of work. Towards this end, it is proposed that there should be:

a. Clear connection of curricula to practices and productivity in the work place;
b. Active cooperation with sectoral organizations which can encourage and reward their members for active participation in TVE; and
c. Institutions marketing their graduates, and advertising their quality and competence.

4. Recommendations

a. All countries should enact laws that provide for and ensure the development of TVE, spelling out clear roles, and relationships between training institutions, enterprises and government.

b. National governments should develop and disseminate information on economic activity, labor market trends, and training goals -- in-collaboration with their economic partners -- to assist in rational planning and harmonizing of training effort.

c. Institutions should seek out and maintain relationships with business, industry and organized labor.

Chapter 5

Sources of Funds and Teachers for TVE

A. Sources of Funding and Related Issues

1. Observations

While there is unanimous concern about the inadequacy of funds for TVE, it is clear that this constraint is most deeply felt among the developing countries.

There is agreement that governments will continue to be the primary sources of support for secondary level vocational training for youth in most countries. There are, however, real limits on achieving the massive expansion of government funding of TVE that will be needed to achieve a high standard of skills for the existing workforce. It was thus obvious that this traditional funding needs to be augmented by use of an increasing variety of sources, to achieve the necessary development and improvement of TVE.

Thus in most countries, there is already an emphasis on increasing enterprise funding for the training of adults in the labor force and moreover, an expectation that students will contribute financially to their vocational education at secondary and tertiary levels.

The general move to more funding from non-government sources will be beneficial in so far as it aids in the creation of a more responsive and diversified TVE system, that is well connected to the labor market. On the other hand, these financial sources raise significant issues concerning access to training, and the governance of TVE. As long as governments are the primary source of funds, public access to training is a simple function of the size of budgets and open political decision. When there are several sources of funds, each with interests at stake in TVE, the issue of "who receives training ?" is harder to answer. This matter is of direct concern given the commitment to equal access to training in the UNESCO convention on TVE.

2. Issues and Problems

The difficulties and concerns identified in Symposium discussions were characteristic of most countries, but are of most concern in developing countries:

a. Despite its critically important role in economic development, TVE continues to receive inadequate operating and capital funding. This is apparent, both in funding for TVE relative to general/academic education, and absolutely given its mandate to develop and provide a well trained workforce. This funding problem applies to both institutions, and enterprise based programs, with the exception perhaps of a few European countries. Furthermore, it is perceived that the issue of TVE funding and access to training, needs far more attention in legislatures, to assist the development of a social consensus on this key economic and social issue.

b. Laws can be used to regulate funding, and the involvement of enterprises as both trainers and funders. However, as enterprises can experience financial difficulties, and even fail, the ultimate responsibility for the continuing vocational education of their trainees and especially youth, becomes an important issue for governments..

c. Increasing acceptance of the "user pay" principle in TVE by levying tuition fees can aggravate the problems of poor students in their endeavor to gain skills and become more productive citizens.

d. In many countries, there is uncertainty and confusion over the priority of training for youth at the entry level, versus retraining and upgrading the existing adult workforce, including workers affected by structural changes in their industry.

3. Strategies for Solutions

None of these problems can be easily solved. However, there was general agreement that several matters need due consideration in both developing and developed countries:

First, secondary and tertiary TVE institutions should pursue the possibilities of developing a variety of sources of funding:

a) Governments at national, regional and local level;
b) Joint funding of courses by enterprises, trades associations, and unions;
c) Tuition fees, scaled according to demand and costs of provision;
d) Contributions from employers of trainees and graduates, by public donations, loans, or equipment;
e) Public donations, scholarships and bursaries;
f) Profits from institution based enterprises and production units;and
g) Loans from banks for enterprise development.

Second, there is much greater use of tuition fees to increase funds and thus enrollment. Such fees can improve the commitment and performance of students in their courses. However, they can also result in hardship, unless balanced by student assistance, such as :

a) student labor in exchange for fee, supplies, books and living expenses;
b) apprenticeship wages, thus providing income for schooling ;
c) student grants and scholarships at the school, institution or government level;
d) student loans with concessional interest rates, repayable through future income.

It was noted that while academic education and universities tend to have well developed programs of student aid they are lacking or quite inadequate in most TVE. The exception is enterprise sponsored institutions, serving students referred by the enterprise.

Third, there is scope for legislative provisions, other than direct government finance, including:

a) Industry wide, or country-wide, levies for training, especially to fund training of the existing workforce;
b) Tax concessions for enterprise sponsored training, both of existing and prospective workers;
c) Tax concessions for enterprise sponsorship of institutions, their programs and students. This can include enterprise purchase or subsidy of training for their employers.

Fourth, it is clear that provision of TVE for women and disadvantaged groups must remains a unique priority of government, consistent with national social welfare. This obligation means there will often be the need for targetted and specialised TVE programs to meet these social challenges, and address the difficulties flowing from problems of definition, issues of fairness and priority and often, high relative costs.

4. Recommendation:

National governments should pursue an appropriate five part strategy with respect to funding TVE:

a) seek to increase their funding for TVE, wherever possible, through mechanisms that are open and consistent with costs.

b) permit institutions to pursue and retain financial contributions from a wide variety of sources;

c) provide "safety net" support for those who might face difficulties in accessing TVE subject to tuition fees;

d) accept the principal responsibility for funding the provision of TVE to special populations; and

e) monitor the impact of new funding arrangements on enrolments, practices, and the cost effectiveness of TVE institutions.

B. Sources of Teaching Staff and Staffing Issues

1. Observations

Recruitment and training of teachers in the general/academic system from kindergarten to university is a relatively clear and consistent process in all countries. For TVE, the matter is more complex. TVE teaching requires the melding of theory and practice (praxis), and mastery of a variety of pedagogies. This requirement, when coupled with relatively low pay and public esteem in many countries, constitutes a major problem in achieving an adequate supply of competent teachers for the provision of TVE. Indeed, this is perhaps the most important problem in many countries.

Experience indicates there is highest success and satisfaction in recruitment and retention of good teachers when there is a separate TVE system with its own standards, recruitment, training and upgrading systems. While expensive this can be cost effective, and requires change from the traditional integration of general-academic and TVE teachers, especially at the secondary level.

A secondary problem is that TVE at the skilled, technical and professional levels requires distinctly different levels of expertise, practice and theory abilities, and pedagogical skills. In practice, staff recruitment is difficult, and the working situation in the enterprise or institution is much less than ideal.

Fast-changing technology simply adds to this historic problem, and emphasizes the importance of in-service training and upgrading.

2. Issues and Problems

The following concerns exemplify the general situation:

a) It is difficult to retain highly qualified staff, because of better pay, status and working conditions elsewhere. This is especially the case in developing countries;

b) Teachers tend to have either theoretical or practical backgrounds and styles, but seldom the desired mix;

c) Few technically competent people have had training in teaching.

d) Retraining is expensive, but is needed for most TVE teachers, and increasingly more frequently, as change in technologies and work practices accelerates. Yet there is resistance in most institutions to providing significant time off for retraining and upgrading of teachers and few incentives for teachers to improve their skills or retrain;

e) Trainers in industry require particular assistance as very few countries mandate or ensure `trainer training';

3. Strategies for Solutions

As with funding issues, there are no easy answers to problems in recruitment and retention of qualified teachers and trainers.

The following strategies have been found to be practical in selected situations. But few could be applied in all countries:

a) Establishment of specialised institutions for training of craftsmen and technicians as teachers.

b) Specification of clearly defined national standards of pedagogical training and professional standards of retraining for TVE teachers.

c) Development of support and incentives for TVE teachers to gain work experience, to keep them up-to-date on changes in technology and work practices.

d) Introduction of requirements for industry/business associations to set standards for, and preparation of enterprise trainers as in a few developed countries.

e) Provision of supplementary pay allowances -- however small -- for teachers and trainers with pedagogical training appropriate to their field of work e.g., technical, craft, high technology.

f) Ensuring that TVE leads to attractive career paths and socially valued work for students will help ensure that TVE teaching is seen as more significant and challenging, and its status as a profession thus enhanced..

g) Good pay, job security and responsibility are elements of an attractive, high status profession.

h) Recruitment of women and persons from disadvantaged groups can simultaneously provide an increased source of potential TVE teachers, and an opportunity for advancement for individuals.

4. Recommendations

It is generally agreed that two conditions should be met for rectification of current problems:

a) Pay and working conditions of TVE teachers should at least approximate those of craftspersons and technicians in other employment;

b) National governments are urged to establish adequate standards for TVE teachers and trainers; determine the certification of TVE teachers, including pedagogy and provide the consequential initial training and upgrading of teachers.

Chapter 6

Levels, Systems and Management of Technical and Vocational Education

1. Observations

Levels and systems of TVE differ between countries. In most developing countries there is 7-9 years of general/academic education typically including some basic vocational skills. This is followed by 3-4 years in either of two streams: a continuation of general/academic education or basic vocational training. There is also a modest provision of post secondary vocational education for technicians. In developed countries the provision of vocational education in secondary schools is, with a few distinguished exceptions, relatively slight. Instead the bulk of TVE occurs -- after some 10-12 years of general/academic schooling -- in post-secondary institutions over several skill levels, plus substantial on-the-job training in industry and business.

Furthermore, in all countries there are examples of specialized TVE institutions serving the requirements of particular major public and private industries.

2. New Challenges - New Approaches

The traditional TVE system has been highly centralized to ensure the effective transmission and delivery of government policies and priorities. While this approach has worked well in the past, there are new influences at work that require greater devolution of responsibility. The need for TVE institutions to build closer links with industry, to develop new funding sources, and to match changing technology and work practices at the local level, all mean that institutions will need greater freedom to innovate and respond.

The transition to a new organizational approach will pose challenges to central agencies -- to accept a reduction in the level and scope of their control and to find means of pursuing national policies less directly. On the other hand, institutions will need to develop a balance between enterprise and public service, while maintaining educational standards and accepting much higher accountability for performance.

Several countries also reported the rationalisation of many small TVE institutions into fewer larger institutions in order to gain economies of scale and increase the array of study options and services to students. This development could also assist collaboration with industry as long as direct local links were not lost.

These several changes have obvious implications for the management of TVE. At the central level there will often be reductions in administrative staffing and increased need for planning and monitoring skills. At local institutions the traditional three level management organization -- Principal, Heads of Department and Staff -- will not meet the new requirement. Each country will develop management structures best suited to its needs. For example, new structures for rural areas and the development of new management skills by formal training and upgrading are required.

For TVE to be fully successful, career paths also need to be available to teaching and other TVE staff permitting progression through to educational management on the basis of demonstrated merit, including their ability to collaborate with business and industry.

3. New Linkages -- New Technologies -- New Institutions

A different but important systemic issue concerns inter-sectoral linkages. These have not been accorded the importance they merit, as they are both a key part of career paths for students and a factor in the standing of

TVE. For these reasons countries should seek to achieve a clear articulation of programs between TVE in the secondary schools and TVE in the polytechnics and universities, and the world of work. These links will facility mobility and advancement between educational sectors and with, and between, industries.

Rapid advances in the technology of communications implies the feasibility of an advanced institute at the international level, focusing on the new technologies, their applications to problems of TVE, and their diffusion to all countries.

These same technologies have already enabled successful development of distance learning systems in many countries, and the creation of an international distance learning university - the Commonwealth of Learning based in Canada. The time is approaching when an international distance learning TVE institution may be feasible; - such an institution could assist countries in their own development of distance education, and the sharing national expertise.

2. Recommendations

a. Governments should examine what changes in organizational structures and administrative processes at both the center and individual TVE institution will be needed to achieve the new operating environment required for effective TVE;

b. Countries must develop and implement training programs for the management/leadership in TVE as occurs in other services and vocations.

c. Action is needed to establish effective articulation between TVE courses and those in the secondary schools, polytechnics and universities, and with the world of work.

Chapter 7

Promotion of International, Regional and National Cooperation

1. Observation

Most countries have some experience in international and regional cooperation. Symposium discussion focused on sharing experience and identifying areas for improvement and action.

There was broad agreement that cooperation can have several focuses:

- -- the exchange of curriculum and teaching materials
- -- the provision of teaching equipment and the design of facilities
- -- the exchange of teachers, or provision of teacher training and trainer-training services; and not least
- -- assistance in strengthening sectoral and institutional organizations.

Of these forms, cooperation in the training of teachers and trainers was considered the most effective because of its multiplier effect and contribution to increasing self reliance.

While development aid has driven most cooperation in past decades, several countries stressed the growing scope for benefiting from the exchange of "best practice " in TVE that was no longer the preserve of developed countries. Whatever the form of cooperation or source of funding, international cooperation will be more effective if it is based on the careful assessment of needs and regular impact assessments. It should also be seen as collaboration for mutual benefit rather than charity or subordination.

In considering the role of the international agencies and their regional arms in promoting cooperation, two issues deserving attention were noted:

-- uncertainties as to the respective roles of the several agencies which have interests in TVE, and to the consistency of their programs of assistance to TVE; and

-- the need in the Asian and Pacific region for integrating the policies of the key regional bodies, especially APEC, ASEAN, ADB and SEAMEO with regional TVE programs.

There was wide support for the UNEVOC project, subject to the need to ensure that such projects involving "key institutions" achieve widespread gains to all TVE institutions and not simply confer special advantages on a few.

The discussion also canvassed two new international relations for TVE. First, was the recognition that the growing trade in commercial TVE services could generate such competitive behavior as to jeopardize long standing cooperative endeavors to advance 'education for all'. Second, was the acknowledgment of the growing significance of multinational corporations in national economies, and their development of (effectively) international skill standards. Both need deliberate discussion.

2. Recommendations

a) Developing and developed countries should collaborate in achieving greater access to aid programs for the improved transfer of knowledge and skill in TVE.

b) The roles of key international agencies (UNESCO/ILO/UNDP/WB etc.) should be clarified to ensure that there are mechanisms for achieving consistency and complementarity.

c) The economic and social objectives developed by the key regional bodies in the Asian-Pacific region -- especially APEC, ASEAN, SEAMEO and ADB -- should be integrated into the activities of the regional activities of the international agencies.

d) Mechanisms for producing a regular assessment of the conditions of TVE at regional, and perhaps international, level, should be developed to improve the sharing of key developments in policy practice;

e) An appropriate terminology to describe TVE structures, policies, and practice and standard measures to quantify TVE operations, should be developed in collaboration with the ILO and the International Statistical Agency.

f) Guidelines should be developed for national plans of action to change TVE so that it better matches the requirements of women, and assists in overcoming the disadvantages faced by indigenous people, ethnic minorities, migrants and people with disabilities.

g) The findings from UNEVOC project in the Asian-Pacific region should be effectively promulgated so that the project helps achieve an even development in TVE in countries rather than benefitting a small group of selected institutions by privileged access to international experience.

h) UNESCO should convene a high level meeting with the representatives of TVE and multinationals to identify "best practice" partnerships with host nations to advance TVE, especially in developing countries.

Chapter 8

Recommendations

A. National Action

The Symposium recommends that Member States accelerate their implementation of the 1989 UNESCO Convention on Technical and Vocational

Education, by taking action to:

1. review the adequacy of action to upgrade the skills of adult workers, and establish an appropriate balance between youth and adult training;

2. consider the value in establishing national skill targets to guide TVE provision;

3. legislate to encourage and induce enterprises -- both public and private -- to engage in TVE by such mechanisms as tax incentives and/or industry levies;

4. establish organisational structures that encourage the flow of information and relevant data and associated research on TVE, within and between countries;

5. focus energy on the reform of existing curricula and institutional patterns of behavior so that TVE and general/academic education are linked at all levels, and are available to adult learners in a practical way;

6. enact laws that provide for, and ensure the development of TVE, by defining clear roles and relationships between institutions and enterprises;

7. develop and disseminate information on economic activity, labor market trends and training goals -- in collaboration with their economic partners -- to assist in the rational planning and harmonising of training effort;

8. ensure TVE institutions seek out and maintain effective relationships with business, industry and organised labor;

9. pursue an appropriate five part financial strategy by

   a) maintaining and wherever possible increasing their direct funding for TVE, through mechanisms that are open and consistent with costs;

   b) permitting institutions to pursue and retain financial contributions from a wide variety of sources;

   c) providing "safety net" support for those who that might face difficulties in accessing TVE subject to tuition fees;

d) accepting the principal responsibility for funding the provision of specialised programs of TVE for women and disadvantaged groups; and

e) monitoring the impact of new funding arrangements on enrollments.

10. examine what changes in organisational structures and administrative process at both the center and individual institutions will be needed to achieve the new operating environment required for effective TVE;

11. develop and implement training programs for TVE managers as occurs in other services and vocations

12. establish effective articulation between TVE courses and those in secondary schools, polytechnics, universities and the world of work;

13. improve bi-lateral cooperation to achieve greater use of aid program support for the improvement of TVE; and actively support involvedment in the UNEVOC project.

B. International Action

The Symposium recommends to UNESCO, and related international agencies, that assistance be provided to national development of effective TVE systems by taking action to:

1. initiate regular overviews of developments in TVE in all countries, to improve the sharing of key advances in policy and practice;
2. develop in conjunction with ILO and the International Statistical Agency respectively, an appropriate terminology to describe TVE structures, policies and practices, and standard measures to quantify TVE operations, to facilitate cross-country understanding and comparisons;
3. develop at regional level, analyses of the determinants of the public standing of TVE, as the basis for action strategies by countries to achieve enhancement of this standing;
4. commission research on the reasons and processes for transitions in the roles and responsibilities in TVE, to aid national policy development;

5. develop guidelines for national plans of action to change TVE so that it better matches the requirements of women, and also helps overcome the problems faced by disadvantaged groups in acquiring and upgrading skills;

6. clarify the respective roles of key international agencies (UNESCO/ILO/UNDP/WB, etc.) and establish clear mechanisms for ensuring their programs directed at TVE are consistent and complementary;

7. ensure the economic and social objectives formulated by the key regional bodies in the Asia-Pacific region -- especially APEC/SEAMEO/ADB -- are integrated into the programs of the regional arms of the international agencies;

8. ensure that the findings from the UNEVOC project in the Asian-Pacific region, are disseminated effectively so that the project helps achieve an even development of TVE, rather than benefitting a small group of selected institutions by privileged access to international experience;

9. convene a high level meeting of representatives of TVE and mutli-corporations to identify "best practice" partnerships to advance TVE, especially in developing countries.

Annex VI

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